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Yates, James

Narrative of the origin and
formation of the...

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1856

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NARRATIVE
OF THE
ORIGIN AND FORMATION
OF THE
INTERNATIONAL ASSOCIATION
FOR OBTAINING A
UNIFORM DECIMAL SYSTEM
OF
MEASURES, WEIGHTS, AND COINS.

BY
JAMES YATES, M.A.,
FELLOW OF THE ROYAL, LINNEAN, AND GEOLOGICAL SOCIETIES,
MEMBER OF THE LITERARY SOCIETY OF LEYDEN, OF THE
ANTIQUARIAN SOCIETY OF AUGSBURG, ETC. ETC.
VICE-PRESIDENT OF THE ABOVE-MENTIONED INTERNATIONAL ASSOCIATION.

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1856.

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INTERNATIONAL ASSOCIATION.

Established September 24th, 1855.

President,

The Baron JAMES DE ROTHCHILD, Consul-General of the Austrian Empire.

Vice-Presidents,

For England, His Grace RICHARD WHATELY, D.D., Archbishop of Dublin.

Right Hon. the Earl FITZWILLIAM.

Right Hon. the Earl FORTESCUE.

Right Hon. the Earl of SHAFTESBURY.

J. B. SMITH, Esq., M.P.

JAMES YATES, Esq., M.A., F.R.S.

France M. MICHEL CHEVALIER, Member of the Institute, Paris.

M. MATHIEU, ditto.

General MORIN, ditto.

M. LE PLAY, Councillor of State.

M. EMILE PEREIRE.

United States of North America.

HICKSON W. FIELD, Esq.

Zollverein of Germany.

Dr. STEINBEISS, Privy Counsellor to the King of Wurtemberg, Stuttgart.

Mexico Signor PACHECO, Minister Plenipotentiary at Paris.

Portugal M. D'AVILA, Minister of State, formerly Minister of Finance.

Spain Signor RAMON DE LA SAGRA, Member of the Cortes.

Tuscany Chevalier CORRADI, Director of the I. and R. Technical Institute of Tuscany, Florence.

Central Committee,

For England, Sir JOSEPH OLLIFFE, Physician to the British Embassy.

EDWARD BLOUNT, Esq., Banker in Paris.

United States. WILLIAM W. MANN, Esq.

EDWARD BROOKS, Esq.

Austria Dr. SCHWARTZ, Chancellor of the Austrian Consulate.

Wurtemberg Mr. A. BAUDISTEL, Stuttgart.

Mr. FERDINAND HUBER, ditto.

Portugal Viscount ALCOCHÊTE, Councillor of Legation.

Signor MOUZINHO DE SILVEIRA, Portuguese Consul.

Mexico Signor ANDRÉS OSEGUERA, First Secretary of Legation.

Argentine Confederation.

M. ALBERDI, Chargé d'Affaires of the Confederation.

Paraguay M. LAPLACE, Consul General of Paraguay.

Costa Rica M. GABRIEL LAFOND, Consul and Chargé d'Affaires.

Secretaries,

For England, HENRY COLE, Esq., Marlborough House, London.

France M. HIPPOLYTE PEUT, 12 Rue de la Bruyère, Paris.

United States, ALEXANDER VATTÉMARE, Esq., 56, Rue de Clichy, Paris.

NARRATIVE OF THE ORIGIN AND FORMATION

OF THE

INTERNATIONAL ASSOCIATION

FOR OBTAINING A

UNIFORM DECIMAL SYSTEM OF MEASURES, WEIGHTS,
AND COINS.

THE autumn of the last year (1855) was remarkable in the history of Europe, and will probably be considered as remarkable in the history of civilization, on account of the large assemblage in Paris of men from all parts of the world, distinguished by their position in society, celebrated for their contributions to the arts and sciences, and met in friendly union to promote objects of great importance to the common welfare of the human race. Not only was the invitation of the Emperor of the French responded to by many of the principal manufacturers of Europe and America, but philosophers and statesmen were called together on several occasions, unconnected with the great Exhibition of Manufacturing Industry. It is the design of the following pages to relate how all these circumstances led to the establishment of the above-named International Association, and thus to introduce a brief account of its aims, its principles, and its constitution.

I. Paris Universal Exhibition.—The countries, which sent to the Exhibition specimens of their raw products

Exhibition of the Manufacturing Industries

try of all
Nations.

and of their manufactures, under the care of authorized Commissioners, were the following:

	No. of Exhibitors.
The French Empire, with its dependencies	10,691
Great Britain, with ditto	2,574
Prussia	1,313
Austrian Empire	1,296
Belgium	686
Spain, with its Colonies	568
Portugal, with ditto	443
Sweden	417
Holland	411
Swiss Confederation	408
Wurtemberg	207
Kingdom of Sardinia	198
Tuscany	197
Bavaria	172
Smaller German States	575
Greece	131
United States of America	130
Norway	121
Mexico	107
Denmark	90
States of the Pope	71
South American Republics	64

In comparing the productions of these different countries, the value of which as merchandize could only be ascertained by knowing their quantities, great inconvenience was experienced from the different systems of weights and measures, although efforts had been made by the Imperial Commissioners to obviate this difficulty by requesting all exhibitors to give descriptions of their goods in the common terms of the Metrical System.* Thus the subject of the Uniformity of Weights and Measures, which had long engaged the attention of the French Government and of the neighbouring continental territories, was forced upon

* The *Metrical System*, which is employed universally in France, Belgium, and the Kingdom of Sardinia, and partially in many other countries, is so called, because it is a *System derived from the Mètre*.

the attention of the Jurymen and Commissioners of this Exhibition, and they were induced to prepare a declaration of opinion, of which the following is a translation: Declaration signed by the Jurymen and Commissioners.

The undersigned, members of the International Jury of the Universal Exhibition in Paris, or Commissioners sent by their respective Governments to this Exhibition, declare it to be their deliberate opinion, that one of the methods best adapted to accelerate that happy movement, which brings all nations together in the paths of their industry, would be the adoption of a universal system of weights and measures. Such a system would resemble a common language, spoken and understood in all parts of the world.

Considering each country by itself, they are of opinion that a large portion of valuable time would be saved to all persons engaged in industrial occupations, such as the heads of commercial houses and other establishments, engineers, clerks, and workmen, if this uniform system were decimal, the multiples and divisions of the units being formed by multiplying or dividing each other by ten.

This saving of time would be still greater, if the different units denoting length, surface, bulk, weight, and money, were deducible from each other according to decimal relations between their elementary constituents.

They think that the practice established in each country of denoting the units of weight and measure by names of long standing would be no obstacle; since in the greater number of cases nothing would prevent the application of these ancient names to the new units.

They consequently deem it their duty earnestly to recommend to the consideration of their respective governments and of enlightened individuals, friends of civilization and advocates for peace and harmony throughout the world, the adoption of a uniform system of weights and measures, computed decimally, both in regard to its multiples and divisions, and also in regard to the elements of all the different units.

Signed by about 200 persons, including the following subjects of Great Britain: Marquis of Hertford; Lord Ashburton; Sir William Jackson Hooker; Professor Wheatstone; T. Moulson, Master Cutler of Sheffield; P. Le Neve Foster; C. Wentworth Dilke; William Bird; William MacArthur, Sydney; W. H. Holmes, British Guiana; F. Audley; G. O'Brien; Henry Cole, C.B.; Sir Joseph Olliffe.

Resolutions of
the Statistical
Congress in
Brussels and
Paris.

II. *The Statistical Congress.*—Two great meetings have been held for the purpose of collecting and diffusing statistical information, the first in Brussels in the year 1853, the second in Paris last September. Each Congress was sanctioned and assisted in every possible way by the Supreme Government of the country in which it assembled, and was attended by official, scientific, and commercial representatives from all nations of any importance, so that the list of these nations is identical with that above given in relation to the great Industrial Exhibition. At Brussels "the Congress recommended, that in the statistical tables of countries not possessing the Metrical System, a column should be added indicating the Metrical reductions of weights and measures."* At Paris a resolution to the same effect, but still more comprehensive, was introduced by M. Hippolyte Peut, an enlightened and eloquent philanthropist, who during many years has been the ardent advocate for international facilities of every kind. His proposition was ably supported by various members, among whom may be mentioned the Vice-President of the Congress, Baron Charles Dupin, formerly Minister of Agriculture, Commerce, and Public Works. M. Peut's resolution was finally passed under the following form: "The Congress, considering how much the adoption by different nations of a uniform system of Measures, Weights, and Coins, would facilitate the comparative study of the statistics of different countries, resolves that it is desirable to put such a uniform system into energetic practice." It is to be observed, that on this occasion uniformity was recommended in *coins* as well as in weights and measures.†

* *Resumé of Statistical Congress at Brussels*, by L. Levi, Esq., p. 9.

† The discussion is reported in the *Moniteur*, and in the *Pays*, of Thursday, Sept. 13th. The list of the Congress is published officially in the *Moniteur* of Thursday, Sept. 20th.

III. *Circular Letter, dated London, August 30th, 1855.* In anticipation of the opportunities of learning valuable opinions, afforded by the Universal Exhibition and the Statistical Congress, as above mentioned, a letter was subscribed by seven Members of the House of Commons and by six other gentlemen, who had taken a prominent part in the discussion of the same subject in this country. The object of the letter was to obtain opinions respecting the practicability of a uniform system of measures, weights, and coins for all nations, the best means of attaining it, and the difficulties to be encountered in the pursuit of it. The circulation of this letter was principally entrusted to myself, and it consequently belongs to me to give an account of the answers returned to it, so far as I received answers, either orally or in writing.*

Most of the gentlemen, in whose hands I placed the letter, being connected with the Exhibition either as Commissioners or Jurymen, or being members of the Statistical Congress, referred to the above-cited declaration and resolution as expressing their opinions. Others returned answers in writing, which I insert in the Appendix, because they give not merely general answers, but refer to certain special points of importance. I would observe, that the answers, whether oral or written, were all affirmative, i. e. in favour of the practicability and desirableness of a uniform decimal system for all nations, except the answer expressed to me with great kindness and candour by M. Visschers of Brussels. He gave it as his opinion, that since it is vain to hope for absolute uniformity throughout the world or even throughout Europe, it is better to reduce the existing methods, if possible, to 3, 4, or 5, since by aiming at too much we may fail to accomplish any

* See Appendix, No. 1.

Distribution
of Circular
Letter asking
opinions.

thing. Exactly the same opinion was expressed to me some time ago by His Excellency Sir John Bowring, and is entertained by others in this country, who must be admitted to be good judges. But, although I think the opinions of such persons entitled to the greatest respect, I am convinced that they constitute only a small minority.

Discussion of questions in the Letter at a Meeting of the Society of Political Economists.

IV. *Meeting of the Société d'Economie Politique, Sept. 10th, 1855.*—The Society of Political Economists at Paris expressed their hospitality in a most handsome, generous, and agreeable manner, by inviting to one of their Monthly Meetings a considerable number of the distinguished professors and cultivators of the same science, who had come to attend the Statistical Congress. The guests, who were thus honoured, came from England, the United States of America, Belgium, Holland, Prussia, Saxony, Sweden, Denmark, Hamburg, and even from Dorpat and Posen. M. Horace Say, President of the Society, occupied the chair. It was agreed by a large majority of the members present to take into consideration the questions contained in the circular letter from London, which had been put into the hands of those who attended the meeting, and who embraced this opportunity of delivering their opinions upon it. By much the larger number, as will be seen from the report of the discussion in the *Journal des Economistes*, were decidedly of opinion, that a uniform system of weights and measures, and even of coins, is perfectly practicable, and would be of the greatest importance to the world at large.*

Adoption of Decimal Coinage in the United States.

V. *Addresses to the Government of the United States of America.*—One of the first reforms effected by the

* See Appendix, No. II.

United States, after they had achieved their independence, was that of their coinage. Mr. Jefferson, then Secretary of State, and afterwards President, introduced the system, for the most part decimal, which, without any considerable change except in the fineness of the gold and silver coin, continues in use to the present day. In fact the United States arrived in 1786 at the very same point, which the Decimal Association now recommends as the *ultimatum* for Great Britain, and they enforced their scheme by precisely the same arguments.*

First introduction of Decimal Coinage.

Another American statesman, whose name stands only second to that of Jefferson in relation to this subject, was Mr. John Quincy Adams. His "Report on Weights and Measures," presented in 1821, is one of the most important and valuable works on the science of Metrology. It is full of the spirit of philanthropy and of admiration of the Metrical System, which he regarded as the greatest human discovery since the invention of printing. He only abstains from recommending it for immediate adoption by his own countrymen on account of their intimate connection with Great Britain. But he dwells with fervid zeal on the blessings of a universal system, and, convinced that the Metrical System alone can become universal, anticipates the happy age, "when the *mètre* will surround the globe in use as well as in multiplied extension, and one language of weights and measures will be spoken from the equator to the poles." (P. 92.)

Report of John Quincy Adams in favour of the Metrical System.

The tardiness of the United States has been continually and, perhaps, unavoidably augmented by the inertness of Great Britain. Nevertheless many of the principal citizens of that great confederation of republics have recently manifested a very strong desire to

* See Appendix, No. III.

adopt a better system of measures, weights, and coins, in such a way as to be in accordance with other civilized nations.

The first recent manifestation of this sentiment was a correspondence with that most active and enlightened friend of peace and human improvement, Mr. Alexander Vattemare, who became the medium of an exchange of standard sets of weights and measures between the governments of France and the United States. By a Resolution of Congress in June, 1848, a complete series of the weights and measures of the United States was sent to Paris and deposited in the great *Conservatoire des Arts et Metiers*, where it is now to be seen. Soon afterwards the French government responded by sending to Washington perfect specimens of the *Mètre*, the *Litre*, and the *Kilogramme*, with various instruments and documents illustrative of their authority and use. This friendly and generous proceeding between the two governments was soon followed by a petition to the Senate and House of Representatives from 146 citizens of the United States, who were at the time in Paris. Having stated the grounds of their opinion in favour of the adoption "by the United States and all civilized nations of some one, the best system, of weights, measures, and money," they conclude as follows:

Now the undersigned respectfully represent, that their observation and experience in this and other countries, since they left the United States, have impressed them, more deeply than ever, with a sense of the great benefits that would accrue to the world at large, and especially to their own country, *from the universal adoption of a common system of weights, measures, and money*, and they earnestly pray Your Honorable Bodies to take the matter into early and serious consideration; to appoint a committee for the examination of the French Metrical Decimal System; and, if the said committee should report, that this system is the best that has been yet invented; that it is convenient in daily popular use; that it responds, or can be rea-

Friendly interchange of standards between France and the United States.

Petition to Congress from Americans in Paris.

dily made to respond to the demands of *growing commerce*; that by the principle upon which it is based, and the simplicity of its construction, this system is eminently fitted for universal and permanent adoption; then the undersigned earnestly pray that Congress will *provide for the incorporation of the Metrical Decimal System into the legislation of the United States*.

On the other side of the Atlantic these enlightened and patriotic sentiments were re-echoed by the American Geographical and Statistical Society, whose President is the Hon. George Bancroft, the historian, who in 1850 filled the office of American Minister at the Court of Great Britain. This distinguished Society appointed three of its members to prepare a Report, which the Society adopted. In pursuance of its recommendations they presented a Memorial to Congress in February, 1854, briefly repeating the observations and arguments contained in the Report, and showing the expediency of the adoption of a uniform decimal system of weights and measures by the United States in common with other civilized countries, and of a congress of scientific delegates from the leading commercial nations of the world with a view to this object.*

Memorial to Congress from the American Geog. and Stat. Society.

VI. *The Zollverein of Germany*.—The German Zollverein, or Customs Union, comprehends the Kingdoms of Prussia, Saxony, Bavaria, and Wurtemberg; the Grand Duchies of Baden, Hesse Darmstadt, Luxemburg, Saxe-Weimar, and Nassau; the Electorate of Hesse Cassell; the Free City of Frankfort; and about fourteen smaller states.

Advances in the German Zollverein,

Considerable advances towards uniformity have been recently made both by the united Zollverein, and, in various ways, by several of the states composing the union.

towards uniformity in Decimal weights and measures,

* See Appendix, No. IV.

The most important of these movements is the adoption of what is called the *Zoll-centner*, being a *Hundred-weight* exactly equal to 50 kilogrammes, which makes the ton of the *Zollverein* identical with the ton of the Metrical System. The gramme being, moreover, used throughout Germany in Chemistry, in scientific pursuits, and in all the more delicate operations, there seems no reason to doubt, that all Germany will before long weigh only according to the ton, kilogramme, and gramme of the Metrical System, using as units the first for merchandise and all bulky substances, the second in retail dealings, and the third in scientific investigations, in pharmacy, and in weighing the precious metals.*

The Metrical System is established by law for both weights and measures in the City of Frankfort. The Grand Duchy of Baden has altered its foot so as to contain exactly three decimètres, which are divided into centimètres and millimètres. Bavaria has resolved upon adopting the Metrical System in weights and measures.

and in Decimal coinage.

The tendency to the adoption of one monetary system throughout the South of Germany, with the exception of Austria, is equally apparent. In 1837 the following states, viz. Bavaria, Wurtemberg, Baden, Hesse, Nassau, Frankfort, with various small principalities, resolved to unite in the use of the same coinage, and their coins, though issuing from different mints, have been from that time every where interchangeable. But this arrangement, though attended with great advantages, compared with the practice, which formerly prevailed, is only temporary, and will probably give way before many years to the universal adoption of the

* It may be noted here, that Holland and Denmark use to a great extent the system of weights mentioned in the text.

Metrical System in money as well as in weights and measures. Among the delegates, who met last year at Vienna to devise a monetary system for all Germany, those representing countries, whose financial position would enable them to issue coin, agreed, with the sole exception of Prussia, in the opinion, that it would be best "to make concessions on all sides, throw up all existing coins, and boldly introduce the most perfect system, theoretically and practically, known in the world, the French decimal system."*

With this strong general tendency to combine in the pursuit of a most desirable and beneficent object, and when so many of those distinguished and influential men, who had recommended an international system in their respective vicinities, were assembled in one city and were in daily intercourse with one another, it is not surprising that they should have endeavoured to form a plan for carrying their ardent wishes and settled purpose into practical operation. After the close of the Statistical Congress, to which their attention had been in a considerable degree devoted, they first held two private meetings, consisting of the following gentlemen, nearly all of whom had already by their separate action contributed in different ways to the attainment of the same object.

JAMES YATES, Esq., F.R.S., Highgate, near London, Chairman.
M. HIPPOLYTE PÉRET, 12, Rue de la Bruyère, Paris, Secretary.†
M. BÉNARD, one of the Editors of *Le Siècle*.‡
Samuel Brown, Esq., V.P. Institute of Actuaries, London.

* Vienna Correspondent in the *Daily News* of Feb. 17th, 1855.

† I must be allowed to give a somewhat detailed account of M. Péret's merits in regard to this question in the Appendix, No. V.

‡ M. Bénard has published two valuable papers on the questions of the fineness (*titre*) and the standard of value (*étalon*) in the *Siècle* for Oct. 10 and 24, 1855.

Private preparatory Meetings held after the close of the Statistical Congress.

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* Vienna Correspondent in the *Daily News* of Feb. 17th, 1855.

† I must be allowed to give a somewhat detailed account of M. Peut's merits in regard to this question in the Appendix, No. V.

‡ M. Bénard has published two valuable papers on the questions of the fineness (*titre*) and the standard of value (*étalon*) in the *Siècle* for Oct. 10 and 24, 1855.

Private preparatory
Meetings held
after the close
of the Statistical Congress.

M. Carteron, of Macon, Member of the Legion of Honour.*
 Edwin Chadwick, Esq., C.B., Richmond, near London.
 M. Georges Clermont, Verviers, Belgium.†
 Viscount Ebrington, M.P.‡
 Hickson W. Field, Esq., New York.
 M. Joseph Garnier, Professor at the *Ecole des Ponts et Chaussées*, Paris.
 Professor Hennessy, Dublin.
 Alexander Konarski, a Pole, naturalized in England.
 Leone Levi, Esq., F.S.A. and F.S.S.§
 William W. Mann, Esq., Georgia.
 Abbé Moigno, Editor of the *Cosmos*, Paris.
 Abbé Bonifacio Sotos Ochando, Member of the Cortes, Spain.
 M. Silbermann, Paris.||
 M. Alexandre Vattemare.¶

The object of the above-named gentlemen was to make the necessary preparations for the more general meeting, which was to follow. In these arrangements we received the most valuable assistance from three of the principal Commissioners of the great Exhibition, viz.

* See the notice of this most excellent man in Appendix, No. I, pp. 27—29.

† See M. Clermont's letter in Appendix, No. I, p. 36.

‡ It is due to Lord Ebrington to record, that to his judicious activity and his generous and enlarged philanthropy we are principally indebted for the establishment of our Association.

§ Professor of Commercial Law in King's College, London; author of various celebrated works on International and Commercial Law; Metropolitan representative of the Chambers of Commerce of Bristol, Hull, Bradford, Edinburgh, Belfast, and other places; possessor of the Gold Medal for Science and Arts, granted to him by His Majesty the King of Prussia and by His Majesty the Emperor of Austria. A sketch of his remarkable history is given in the Illustrated London News, A.D. 1854, p. 653.

|| Keeper of the *Conservatoire des Arts et Métiers*. M. Silbermann has here under his care the most extensive collection of the weights and measures of different nations, which is any where to be seen. It belongs to his office to make the standard weights and measures, which are sent by the French Government to different countries.

¶ M. Vattemare has rendered most important services to the civilized world by establishing and maintaining an office at his own expense for exchanging books and other documents between different countries.

M. Arlès-Dufour, of Lyons, General Secretary,
 M. Le Play, General Commissioner,
 Henry Cole, Esq., C.B., of London, Commissioner for Great Britain and Ireland.

Most thankfully we accepted the offer of Prince Napoleon and the Imperial Commissioners, that we should hold our meetings in the splendid *Salle de l'Empereur* of the *Palais d'Industrie*, and we considered it a circumstance in the highest degree auspicious, that the head of the European banking-house of the Rothschilds consented to preside. Two English noblemen, whose names and character are adapted to give support to every institution which they patronize, viz. the Earl of Shaftesbury and Lord Holland, also signified their adhesion at this critical moment.

A meeting was called by advertisement in Galvani's and other Journals, to be held on Monday, Sept. 24th, "the Commissioners of the different countries, and the members of the several Juries, connected with the great Exhibition," being invited to attend and take part. The result was an assemblage at the appointed time of about 150 persons, who might be fairly regarded as representatives of all America and of more than the Western half of Europe. The Baron James de Rothschild delivered the following address on taking the chair:

(Translation.)

GENTLEMEN,

Permit me, in expressing how deeply sensible I am of the honour you have conferred on me to-day, to mention that I do not feel myself adequate to the eminent task you have confided to me, and that I have not leisure entirely to devote myself to the study of the question which occupies your attention. But I rely on your benevolent indulgence, of which you have already given me the most flattering proofs. I have a strong hope that our united efforts will be crowned with success, and that we shall accomplish a work of the highest importance to the countries we represent, for the development of commerce, the facility of exchanges, and the maintenance of peace.

Public Meeting held Sept. 24th.

Opening address of the President.

No place could be more appropriate for this meeting than the Palace of the great Exhibition, in which all nations have been invited to display the productions of their industry, and where their minds have been impressed with sentiments of reciprocal friendship and esteem.

Our object is to establish one uniform system of money, weights, and measures throughout the world.

In a commercial point of view, who does not see the immense advantages, which would result from such a system? There would be less difficulty and less embarrassment in all commercial transactions. It is plain that merchandise could go from the most remote portions of the globe, and could circulate through the whole world, stopping anywhere to change hands, without error or dispute. The same weights would be used everywhere to estimate the bulk, the same measures the extent, the same tokens to pay the account; while, at present, in all commercial places, merchandise is forwarded and only arrives at its destination after having been submitted to a variety of long and difficult calculations.

The benefits of such a simplification would be incalculable to commerce, and we cannot too greatly appreciate the saving in time. Without wishing to prejudice the result of your deliberations, permit me to say, that the rational system, which has been adopted in France after most serious deliberation, is worthy of the consideration of all of us. Several countries have already entered upon the course that we indicate. Switzerland has lately changed her system for that of France. Belgium has already set the example. Spain is making an analogous change in weights and measures.

We have, then, every reason to hope that a common language will ere long be adopted for the commerce of all nations. It is an immense result, and one in which we shall be proud of having given our assistance.

As a matter of political importance, our efforts in this cause will not be lost. By more frequent communication, by an increasing reciprocity of interests, by a better mutual understanding, the nations will learn more fully to appreciate the benefits of an industry which has already raised the public riches so high, and which has effected the remarkable progress of which you have this day the evidence before you.

Gentlemen, let us then work with confidence. The generous and civilizing thought which inspires us carries in itself the pledge of success.

After this address, Monsieur H. Peut read as follows:

I. Taking into consideration,

1st. The Resolution adopted in 1853 by the International Statistical Congress held at Brussels, in the following terms:

Resolutions,
by which the
Society was
constituted
and esta-
blished.

"That in the statistical tables prepared in the countries where the *système métrique* does not exist, a column, indicating the metrical reduction of the weights and measures, should be added."

2nd. That expressed in 1855 by the International Statistical Congress held at Paris in the following terms:

"The Congress, considering how much the adoption of a uniform system of money, weights, and measures, would facilitate the comparative study of the statistics of different countries, resolves that it is desirable to put such a system into energetic practice."

3rd. The address signed by members of the International Jury, and by the Commissioners of various Governments at the Universal Exhibition in Paris, as well as by the principal traders, artificers, and manufacturers, in favour of uniformity in money, weights, and measures.

4th. The memorial presented to the Congress of the United States by the American Geographical and Statistical Society, ending thus:

"Your memorialists therefore humbly pray your Honourable Bodies to take into early consideration the propriety of a thorough revision of our National Weights and Measures, and the expediency of endeavouring, by inviting other nations to unite in a Scientific Congress, or by such other means as to your wisdom shall seem meet, to procure the adoption of international standards for common reference."

5th! The efforts made by several great nations, principally by the Zollverein of Germany, to arrive at a uniform system of money, weights and measures;

The undersigned, in order to co-operate actively for the realization of these desires and efforts, have, subject to the approbation of their Governments, determined to form an International Association, composed of members chosen from the different civilized nations, who shall engage to devote themselves, each in his own country, by means of committees appointed for this purpose, and corresponding with one another, to the establishment, in all civilized countries, of a uniform decimal system of weights and measures, and, as far as possible, of moneys.

II. The undersigned agree, moreover, in the most formal manner, that all discussion beside the special object of the Association shall be interdicted in all meetings which shall have for their object the realization of the ideas herein expressed.

These two Resolutions, read by M. Peut, were the same which had been agreed upon at the private meetings above mentioned. The President invited those

who were present to offer observations upon them in any language, which they preferred. Notwithstanding this considerate proposal, all spoke in French. After some discussion, the Resolutions were adopted unanimously. The only material difference of opinion was upon the question, whether the system to be established should include money as well as weights and measures.

Uniformity to be established as far as possible in Coins as well as in Weights and Measures.

It may be observed, that during the whole course of this inquiry from the time of the first Statistical Congress in 1853, a more general and decided wish has been expressed in favour of uniformity in Weights and Measures than in Money. Hence it became a question, both in our preliminary private meetings, and in our subsequent general meeting on the 24th of September, whether Money should be included in the scheme. A considerable majority of those who voted on these several occasions, thought it highly desirable to include Money; but, since so many thought the Money question more difficult of solution than that relating to Weights and Measures, and it was at the same time thought expedient to comprehend in the Association as many as possible of those who were sincerely and earnestly attached to the international as well as to the decimal principle, a distinction was laid down in the Resolution, which forms the basis of the Association, to the effect, that it was to aim at *absolute* uniformity in Weights and Measures, and at all *possible* uniformity in Coins.

The two Resolutions having been adopted, papers were laid on the table inscribed with the names of the different countries represented at the meeting, and each member signed his name under the country to which he belonged. A Vice-President was appointed for each country, and thus was established the germ or nucleus of each Branch Society.

Subsequent Meetings were held by adjournment, at which, in consequence of the unavoidable absence of the President, the Chair was occupied successively by two of the Vice-Presidents, viz. M. d'Avila, formerly Minister of Finance in Portugal, and Signor Pacheco, Minister Plenipotentiary of Mexico. The plan of the Association was then matured as follows:

Organization of the Central and Branch Societies.

- I. THE ORGANIZATION OF THE CENTRAL SOCIETY, called the INTERNATIONAL ASSOCIATION FOR OBTAINING A UNIFORM DECIMAL SYSTEM OF MEASURES, WEIGHTS, AND COINS.

Its direction is thus constituted:

1. A President.
2. Vice-Presidents, appointed in reference to the several countries, which they more especially represent, viz. England, France, the United States of America, the Zollverein of Germany, Mexico, Portugal, Spain, Tuscany, and any countries, which may hereafter join the union.
3. A Central Committee, consisting, as far as possible, of two members for each country.
4. Secretaries for England, France, and the United States.

N. B. For the list of these Officers and Committee-men, the reader is referred to the page immediately following the Title of this pamphlet.

II. THE ORGANIZATION OF THE BRANCH SOCIETIES.

The direction of the French Branch was constituted of the following individuals, with power to add to their number:

Constitution of the French Committee, Branch of the Association.

VICE-PRESIDENTS.

M. Michel Chevalier, Member of the Institute.
 M. Mathieu, ditto.
 General Morin, ditto.
 M. Le Play, Councillor of State.
 M. Emile Pereire.

COMMITTEE.

- M. Wolowski, Member of the Institute.
 M. Geoffroy Saint-Hilaire, ditto.
 M. Tresca, Sub-Director of the *Conservatoire des Arts et Métiers*.
 M. Durand, Commissary-General at the Mint.
 M. Gaultier de Claubry, Professor at the School of Pharmacy.
 M. Fleury, Head of the Department for Foreign Commerce at the Ministry of Agriculture, Commerce, and Public Works.
 M. Chemin-Dupontès, Head of a Department at ditto.
 M. Audiganne, ditto ditto.
 M. de Chasseloup la Motte, Head of the Statistical Department of the Railroads, at ditto.
 M. Leboeuf, formerly President of the Tribunal of Commerce.
 M. Horace Say, member of the Chamber of Commerce at Paris.
 M. Le Tellier de la Fosse, ditto.
 M. Bartholony, Banker.
 M. Isaac Pereire.
 M. de Tromelin, Member of the *Corps Législatif*.
 M. E. Droumet, ditto.
 M. Aleau, Professor at the *Conservatoire des Arts et Métiers*.
 M. Emile Trelat, ditto.
 M. Ad. Focillon, Professor at the *Lycée Louis-le-Grand*.
 M. Joseph Garnier, Professor at the *École des Ponts et Chaussées*.
 M. Châlons d'Argé, Director of Fine Arts at the Ministry of State.
 M. Louis Millot, formerly pupil at the *École Polytechnique*.
 M. T. N. Bénard, Editor of the *Sicéle*.
 M. Blum, Editor of *La Science*.
 M. Alfred Darimon, Editor of *La Presse*.
 M. Janicot, Editor of *La Gazette de France*.
 M. Hebert, Honorary Notary.
 M. Frédéric Lacroix, Publiciste.
 M. Daléchamps, officer of the Academy.*

SECRETARIES.

- M. Hippolyte Pout, } General Secretaries of the Association.
 M. Al. Vattemarc, }
 M. Silbermann, Keeper of the *Conservatoire des Arts et Métiers*.
 M. Dujardin d'Hardivillers, Editor of the *Messenger Universel de l'Industrie*.
 M. Felix Belly, Editor of *Le Pays*.

* M. Daléchamps has published an excellent account of the Metrical System under the following title: *Manuel populaire et classique des Poids et Mesures, contenant la Théorie du Système Métrique*, &c., and a very useful synoptical table of the Measures, Weights, and Coins of the same System.

In forming this *Bureau*, especial care was taken to secure the services of the press by including in it the contributors to all the principal newspapers and journals published in Paris. MM. Chevalier, Chemin-Dupontès, and Garnier are of this number, besides those whose titles as *Editors* are expressed in the preceding table.

In like manner the following noblemen and gentlemen, having previously expressed their disposition to take part in the management of the Society, were appointed on the direction of the Branch for Great Britain and Ireland, with power to add to their number:

Appointment of Vice-Presidents and Committee for the English Branch.

VICE-PRESIDENTS.

- His Grace Richard Whately, D.D., Archbishop of Dublin.
 Right Hon. the Earl of Shaftesbury.
 J. B. Smith, Esq., M.P.
 James Yates, Esq., M.A., F.R.S.*

COMMITTEE.

- Charles Babbage, Esq., F.R.S., Corr. Mem. Institute, London.
 Rev. Alfred Barrett, M.A., Highgate.
 James Bell, Esq., M.P., London.
 John Bright, Esq., M.P., Rochdale.
 Samuel Brown, Esq., Actuary of the Guardian Insurance Office, London.
 Edwin Chadwick, Esq., C.B., Richmond.
 Richard Cobden, Esq., M.P., Midhurst.
 Henry Cole, Esq., C.B., Hon. General Secretary, Marlborough House.
 Erasmus Darwin, Esq., London.
 C. Wentworth Dilke, Esq., London.
 Viscount Ebrington, M.P., ditto.
 William Ewart, Esq., M.P., ditto.
 William Fairbairn, Esq., C.E., F.R.S., Manchester.
 William Farr, Esq., M.D., F.R.S., Somerset House, London.
 Roger Fenton, Esq., B.A., London.
 Sir Charles Fox, C.E., London.

* The Earls Fitzwilliam and Fortescue have since accepted the same office. See above, p. 2.

Ralph Heaton, Esq., Birmingham.
 Professor Hennessy, Dublin.
 Thomas Hodgkin, Esq., M.D., London.
 Rev. J. S. Howson, M.A., Coll. Institution, Liverpool.
 William Ihne, Esq., Phil. Dr., Liverpool.
 Professor Key, University College, London.
 John Lee, Esq., LL.D., F.R.S., Hartwell, near Aylesbury.
 Professor Leone Levi, F.S.A., King's College, London.
 John MacGregor, Esq., M.P., London.
 Professor Marks, University College, London.
 David Mocatta, Esq., London.
 J. S. Nettlefold, Esq., London and Birmingham.
 G. H. H. Oliphant, Esq., Temple, London.
 Professor Owen, F.R.S., Corr. Mem. Institute, College of Surgeons, London.
 Theodore W. Rathbone, Esq., Allerton Priory, near Liverpool.
 Professor Alex. Williamson, F.R.S., University College, London.*

* At the meetings of the Provisional Committee held in London, the following names were added:

Rev. J. Barlow, Secretary to the Royal Institution.
 Henry Booth, Esq., Secretary to the London and North-Western Railway, Liverpool.
 Edward Cheshire, Esq., Conservative Club, St. James's Street.
 H. A. Darbishire, Esq., Joint Honorary Secretary, 4, Trafalgar Square, London.
 Robert Ferguson, Esq., Carlisle.
 Right Hon. T. Milner Gibson, M.P.
 Woronzow Greig, Esq., F.R.S., Surrey Lodge, Lambeth.
 Peter Hardy, Esq., F.R.S., Royal Exchange, London.
 G. A. Hamilton, Esq., M.P., Governor of the London and Paris Joint-Stock Bank, 4, Prince's Street, Mansion House, London.
 Frederick Hill, Esq., Assistant Secretary, General Post Office.
 W. B. Hodge, Esq., 5, Whitehall.
 Charles Jellicoe, Esq., Society of Actuaries.
 T. W. Jones, Esq., M.D., 19, Finsbury Pavement.
 E. Kater, Esq., 1, Somers Place, Cambridge Square.
 Samuel Laing, Esq., M.P.
 T. C. Mossom Meekins, Esq., Joint Honorary Secretary, 3, Harcourt Buildings, Inner Temple.
 Thomas Muir, Esq., 24, York Terrace, Regent's Park.
 W. P. Price, Esq., M.P., Tibberton Court, Gloucester.
 Marmaduke Sampson, Esq., 13, Lombard Street.
 Professor Sharper, Sec. R.S., 33, Woburn Place.
 Sir Joshua Walsley, M.P.
 Professor Wheatstone, Lower Mall, Hammersmith.

III. RECOMMENDATIONS TO THE BRANCH SOCIETIES.

1st. That it would be of the greatest importance to encourage the publication of a work offering, in a clear and concise form, the history, as well as an analytical and comparative table, of the different systems of money, weights, and measures, of the principal nations of the earth, to be translated and printed, under the supervision of the Branch Societies, in all the languages of the nations represented in the Association.

Special and immediate objects to be pursued.

2nd. That, for this end, and to insure the perfect correctness of this work, the Branch Societies composing the Association be previously invited to furnish all the information that can be required on the moneys, weights, and measures of the countries to which they severally belong, with the value of these moneys, weights, and measures in terms of the moneys, weights, and measures of the Metrical System, as a standard of general comparison.

3rd. That each Branch Society in the country in which it is formed should use every means in its power, especially the local Press, to enlighten public opinion, and to prepare for the meeting of an official international Congress, charged with solving the problem which constitutes the object of this Association.

4th. That, until the convocation of the above Congress, the members of the Branch Societies should make every effort in order that in statistical calculations and tables, both public and private, the local moneys, weights, and measures, may be accompanied by their reduction into the moneys, weights, and measures of the Metrical System, so that all nations may have a common medium of comparison.

5th. That the three following objects, viz. Unity in the fineness of the coin, Unity in the standard of value, and Unity in weights and measures of all kinds, both economical and scientific, should be earnestly pursued in order to facilitate the general adoption of a uniform system.

In composing this narrative it has been my object to give a simple detail of facts. From these facts the reader will draw his own conclusions. They will assist him in forming a judgment upon the questions proposed in the circular letter dated London, Aug. 30th. Many will, I trust, be enabled, after reading these pages with attention, to say, whether all pursuit of an international decimal system of measures, weights, and coins, ought to be abandoned, because in the opinion

Result of the expression of opinion on the subject.

of a considerable number of eminent men in this country it is impracticable. The contrary opinion has been expressed on the occasions, which I have pointed out, by multitudes of persons of the highest position and authority both as men of experience and as men of science, who, though they belong to many different countries and are devoted to an infinite variety of pursuits, have come to the same conclusion on this one subject. I believe it may be asserted, that since the period of the Crusades there never has been so strong, clear, and decided a declaration of opinion upon any subject, amounting almost to unanimity, as the declaration which has been made the basis of the International Association, and which was expressed in various ways by the representatives of all the principal nations of America and Western Europe, who were congregated in Paris during the last autumn.

In concluding these pages, I shall still avoid speaking in my own name. Were I to do so, mine would be only one feeble voice among thousands, much better entitled to be heard. I will quote the words of some of the great ones of the earth, and thus supply the major proposition of the syllogism, to which the preceding pamphlet is a minor.

Lord Palmerston, speaking in the House of Commons, July 21st, 1849, used these words:

Paramount
force of opi-
nion and its
final triumph.

It may be said, "Your opinions are but opinions, and you express them against our opinions, who have at our command large armies to back them. What are opinions against armies?" Sir, my answer is, *Opinions are stronger than armies. Opinions, if they are founded in truth and justice, will in the end prevail against the bayonets of infantry, the fire of artillery, and the charge of cavalry.*

The Emperor of the French, at the grand close of the Industrial Exhibition, on the 15th of last November, addressing an audience of more than 40,000 per-

sons, who represented all parts of the civilized world, employed the following words:

At the present period of civilization, the successes of armies, however brilliant they may be, are only temporary, and it is *public opinion* that always gains the last victory.

The Editor of the Times, commenting on this magnificent speech, says:

OPINION, under HEAVEN, disposes human affairs; and they who aid to direct and assert it are the true conquerors, liberators, and statesmen of the world.

Here then is sufficient encouragement for the members of the International Association to proceed confidently in their generous and enlightened project. Only time is requisite to ensure its success. Cities, Countries, Provinces, and Principalities, have already to a considerable extent abandoned their peculiar methods of weighing and measuring goods and of reckoning and paying money, and have accommodated themselves to systems, which were both more convenient and more generally understood. In the course of time Nations will be drawn inevitably into the same stream. Great Britain, though she boasts of her insular position, which certainly tends to preserve the peculiarities of her institutions for a longer period, must at length yield to the force of reason, and adopt those principles, the utility and soundness of which have been established by long experience. All narrow and mistaken views, all sordid and selfish interests, must give way before the progress of knowledge and of more generous and philanthropic sentiments. The present period seems peculiarly adapted to make the attempt; and if it be made in earnest and with vigour and constancy, it must and will succeed.

The question
only a ques-
tion of time.

APPENDIX.

No. I. See above, p. 7.

The subjects of inquiry in the Circular Letter were expressed in the subjoined form, consisting of three Questions:

1^{ère}. Quel est le système de Monnaies, Poids, et Mesures, adopté dans votre pays? Veuillez nous indiquer le principe sur lequel il est basé, et sa relation avec la méthode Anglaise.

2^e. Quels seraient, à votre avis, les meilleurs moyens pour obtenir un système international uniforme pour tous les pays?

3^e. Croyez vous qu'il y ait des difficultés insurmontables pour atteindre à ce but? Vous nous obligeriez infiniment de nous les indiquer, si, dans votre opinion, il en existe.

Before distributing this letter, I was requested, as a mark of respect to the Royal Commission on the Coinage, to send a copy of the letter to Lord Monteaule, who was expected to be appointed Chairman of the Commission. I had the satisfaction to receive from his Lordship the following very kind and encouraging reply:

Mount Trenchard, Foynes, 14th Sept., 1855.

DEAR SIR,

I have this morning received your letter of the 8th, together with the proposed circular intended to be addressed to the members of the Statistical Congress. As the Commission for the question of Decimal Coinage has not yet been issued, I am unable to give you any official reply, and still less to speak on behalf of those gentlemen, who are likely to be my colleagues in this very important inquiry. But there can be no doubt, that in collecting information bearing on the subject, you and the distinguished parties, who have signed the queries, are rendering a useful service to your country.

The three Questions in the Circular Letter.

Correspondence with Lord Monteaule.

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No. I.

In cases where your inquiries are addressed to natives of countries, where changes in the system of notation have been made, would it not be important to add some questions respecting the *mode* in which the alteration was effected, a statement of any inconveniences found to result from the first change, and the precautions taken either to avert or to lessen such inconveniences? Where possible, it would also be useful to obtain copies of the laws or ordinances passed or promulgated to give effect to the change.

Many persons, favourable to decimal notation, if we have a tabula rasa to write on, and who admit candidly the preference due to the simpler system, are yet in alarm at the apprehension of inconveniences, resulting temporarily from change. It would be desirable to be prepared with evidence to meet such doubts.

I have the honour to be, dear Sir,

Your very obedient, humble Servant,

MONTAULE.

James Yates, Esq., Hotel des Ambassadeurs,
26, Rue de Lille, Paris.

I may be permitted to observe, that I did not neglect the valuable suggestions contained in Lord Monteaule's letter, and that I have been enabled to obtain some important information respecting the method of effecting the change both of the coinage, and of the weights and measures, in different countries.

I shall now introduce the written answers to the Circular Letter, with a few occasional remarks on the position and circumstances of the authors.

The first shall be that of M. Carteron, a retired physician, formerly Mayor of Macon, Member of the Legion of Honour, &c.

Mr. C. Manby, Secretary to the Institution of Civil Engineers, states,*

That during the period of the Great Exhibition in 1851, the Academy of Science and Art, of Macon, deputed M. Louis de Vinsac, one of the Members, to visit London, for the purpose of urging on the consideration of the deputies, from all countries, then assembled in the Metropolis, the importance of assimilating all coins, weights, and measures, and, if possible, to induce their serious attention towards adopting the decimal system, as now used in France. M. de Vinsac was selected for this mission, not only on account of his general talent,

Written answers to the Circular Letter.

Efforts of MM. Vinsac and Carteron to draw attention in England to the Metrical System.

* Yates on the French System of Measures, Weights, and Coins, Appendix, p. 67.

Appendix,
No. I.
Answers to
the Circular
Letter.

but as having been, for twenty-five years, actively engaged in perfecting and consolidating the decimal system in France,—services which had been recognized in the most complimentary manner by M. Martin du Nord, Minister of Commerce in 1837, since when, his energy in the cause had increased, rather than diminished. The Academy of Maacon, and the Chamber of Commerce of the Department of Saône and Loire, impressed with the manifest advantages to be anticipated for science, manufactures, and commerce, if the French system could be universally adopted, determined to have the honour of sending to the Commercial Congress of 1851, the first ambassador, specially charged to demonstrate the numerous advantages of a system which, after a struggle of half a century, was now firmly established.

M. de Vinsac, accompanied by M. Carteron, President of the Academy, arrived in London in May, 1851, being accredited to some Members of the English Government, to whom he presented an elaborate memorial,* setting forth the advantages of the system he advocated: he also endeavoured to interest in the question, the leading Members of the Juries at the Great Exhibition. The moment did not appear to be propitious. His attempts were not successful, and after depositing with the Secretary of the Institution some interesting documents on the subject, he returned to France, disappointed in his anticipations of co-operation from so pre-eminently a commercial people as the English, who, he conceived, would immediately have accepted so manifest a facility for the operations of trade and interchange among nations. It was due to M. de Vinsac and the Academy of Maacon, thus to record their energetic movement for promoting the introduction of a universal decimal system, which it was felt must, at some period, supersede all local and incomplete systems.

On my arrival in Paris I addressed copies of the circular letter to M. Louis de Vinsac and to M. Carteron. I learnt with regret that the former was dead: but M. Carteron did me the favour to put into my hands at Paris a reply, of which I insert the following translation.

1. M. Carteron's answer to the three questions in the circular letter.

Answer to the 1st Question.—The use of the Metrical System is generally adopted at Maacon and in all the Department of Saône and Loire. The old denominations have disappeared; or, if some of them remain, such as *lieue*, it is understood to signify four kilomètres. In like manner *sou* means five centimes.

* Can this "elaborate memorial" be recovered? J. Y.

Answer of
M. Carteron,
of Maacon,
to the Three
Questions.

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The Metrical System has its foundation in nature. It is derived from the Meridian, a great circle of the earth, belonging equally to all nations. I do not suppose it can be contrary to the feelings of the English, a well-instructed, intelligent, and loyal people.

Answer to 2nd Question.—The best way to obtain a uniform system of measures, weights, and coins for all countries, is to sacrifice national self-love; to adopt a good and useful thing, because it is good and useful, as other countries adopt a good English tool, because it is good; to teach the Metrical System to children, who learn it with ease; to exhibit it in placards; to give lectures on it to adults. The Government must set the example, enjoin it upon its subordinate officers, and take steps for suppressing the old weights and measures.

Answer to 3rd Question.—There will be difficulties in adopting the Metrical System, as there have been in adopting the lever, the saw, the wheel and axis, wedge, &c.

2. From M. Boucher de Perthes, Founder and President of the Imperial Society of Emulation at Abbeville, author of numerous publications on Archeology, Political Economy, Ethics, and other subjects.

Answer of
M. Boucher
de Perthes, of
Abbeville.

To Mr. James Yates, Highgate, near London.

(Translation.)

Abbeville, Nov. 24th, 1855.

SIR, MY HONOURED COLLEAGUE,
It was not until the beginning of this month that I received the interesting and very useful pamphlet on the French System of Measures, Weights, and Coins, and your letter of the 8th of September, accompanying that of the 30th of August from the Committee, of whom you are one. In thanking them for the confidence they have shown me, I beg them, as well as yourself, to accept my excuses for not having replied sooner. I have employed this summer in traversing Spain, which I had not before visited. Thence I passed into Africa, where I visited Mount Atlas and Algeria, and have only returned a short time ago, regretting much, that I was not at home to receive you. My first care on arriving has been to read your pamphlet, which not only is a good work, but a good deed, for the Metrical System is a means of union among nations, and above all it is a remedy against much fraud and deceit, of which the poor man is the first victim. I afterwards communicated your work and the letter of your honourable Colleagues to the Society, and a Committee was

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immediately formed to reply to the questions you submit to us. It is M. Edmond Tannier, formerly Mayor of Abbeville and Vice-President of the Imperial Society of Emulation, who has been named to prepare the Report. I send you herewith his Report. M. Tannier, formerly a pupil of the Polytechnic School, is a well-informed and conscientious man, and you may be assured of the correctness of his quotations. If your colleagues have any other questions to ask, he has charged me to say, that he is at your disposal. A rich proprietor and Mayor of Abbeville, he has had the opportunity of much practical experience in regard to the utility of the system, which you are anxious to bestow upon England. At this moment I am printing the second volume of the *Journey* I made in 1853 in Sicily, in Greece and Constantinople, the Black Sea and the Danubian Provinces. As soon as the work is printed I shall hasten to offer you a copy of it, and I may add to it the second volume of my book on Celtic and Antediluvial Monuments.

In 1845, I was in Sweden, in Norway, and in Denmark, to make some researches on the primitive Scandinavians, and I collected some valuable documents thereupon. If you have any remarks to make on the Druidical stones of England and Scotland, it will be a pleasure to me to insert them in my book. Accept, Sir, my respected colleague, the assurance of my sentiments of devotion.

I. BOUCHER DE PERTIÈRES.

The Report, to which the preceding letter relates, is as follows.

(Translation.)

IMPERIAL SOCIETY OF EMULATION AT ABBEVILLE.

Sitting of the 22nd November, 1855.

The decree which imposed on France uniformity of Measures, Weights, and Coins, was a benefit resulting from the Revolution of 1789; and, if it were necessary to prove it, we need only call to mind, in a few words, the antecedent state of things. At that time not only every province, but every city, every borough, and almost every village, made use of an infinite variety of peculiar methods of calculating extent, weight, and capacity, because they relied mainly on no other foundation than the fancy of the Seigneur of the locality, who inflicted on his vassals either the length of his cane, as a measure of extent, or the size of his glass, as a measure of capacity. Thus 42 different agrarian measures contended for superiority, and divided among themselves the surface of the Department of the Somme.

Report from
the Imperial
Society of
Emulation at
Abbeville.

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the Society at
Abbeville.

These 42 measures, all known under the name of *Journal*, varied amongst themselves, not only in the number of Roods or Perches, which composed them, but the Rood itself, or the Perch, differed in extent according to the locality.

The measures of solidity were to the number of 18, those of weight to the number of 7, those of capacity, for grain, to the number of 40, and as to those in use for liquids, they equally presented great variety, known under the name of *Pot de Vin*, *Pot de Bière*, or of *Lot*, *Potée*, *Pinte*, *Verre*, *Bioc*, *Chopine*, &c. &c.

As the same state of things existed in all the other Departments, it is easy to perceive the difficulty of transacting business between one province and another; and we see that these divergences only continued so long, because it was essential to the feudal system to isolate every possession, and to maintain lines of demarcation by diversity of customs.

Hence on the advent of the States-general, that is to say, on the awakening of the public mind, the desire for a complete reform was loudly expressed by the bailiwick, and the Constituent Assembly conceived a vast project, the realization of which seems to be reserved for our own age.

Impelled by one of those ideas, which are always triumphant in the end, they not only aimed to remove from France the disagreement in the Measures and their strange subdivisions, but on the 8th May, 1790, a decree was passed, the design of which was, that the King of France should engage the King of England to unite to the French Academicians an equal number of Members of the Royal Society of London, in order to fix together upon the basis of an international system of Weights and Measures, which those two enlightened and powerful nations should exert themselves to extend throughout the civilized world.

But the war having prevented England from answering this invitation, it was addressed to all friendly nations, requesting them to send Deputies to the French Commission, then composed of Borda, Brisson, Coulomb, Delambre, Haüy, Lagrange, Laplace, Legendre, Lefebvre-Gineau, Méchain, and Prony. This call was responded to, and the Deputies, who took part in the deliberations, were Aeneas and Van Swinden for the Netherlands; Balbo for Sardinia; Bugge for Denmark; Ciscar and Pedrayès for Spain; Fabbioni for Tuscany; Franchini for the Roman republic; Mascheroni for the Cisalpine republic; Multedo for the Ligurian republic; and Trallès for the Helvetic republic.

On the 22nd June, 1799, the general Commission presented the result of its operations, of its calculations, and of its labours, to the

Commission
for forming an
international
system.

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Legislative Body, which decreed, that the ten-millionth part of the distance from the Equator to the Pole, measured on the surface of the Ocean, should be taken for the unit of length, under the name of *Mètre*; that the contents of a cube, constructed on the 10th part of the *Mètre*, should be taken for the unit of capacity, under the name of *Litre*; that the weight of a volume of distilled water contained in a cube, constructed on the hundredth part of the *Mètre*, should be taken for the unit of weight, under the name of *Gramme*; and lastly, that the multiples and sub-multiples of these units should be denoted by the words Deca, Hecto, Myria, for the ascending series, and Déci, Centi, Milli, for the decreasing series.

Such was the origin of the decimal system definitively completed by the law of the 7th Germinal, in the year XI (28 March, 1803), which established on the same principle the divisions, the weight, and the fineness of the coins. In seeking these fundamental units in nature, and in giving them denominations not derived from any living language, the Commission aimed at respecting the susceptibility of nations, and thus facilitating the spread of a grandly conceived innovation.

However, two systems presented themselves: the Duo-decimal Calculus had also its partizans.

But, in order that this method might be acceptable and complete, it would have been necessary to add two characters to the ciphers in common use; and supposing that the new series had been 1, 2, 3, 4, 5, 6, 7, 8, 9, α , β , and 0, α representing ten, and β representing eleven, both become simple numbers; twelve would be written 10; thirteen would be 11; twenty would be 24 or twice twelve; and 100 would be represented by 144 or twelve times twelve, that is to say, the first series multiplied by itself; so that a century would no longer be a hundred years, but 144 years, expressed in a different manner. From this one may imagine the difficulties and perturbations which would have arisen from such a theory.

The Decimal Calculus consequently obtained the preference, and 16 nations have now adopted it as the most simple, the most complete, and the most rational: the most simple, because it makes no change in the series of the numbers; the most complete, because it is applicable to common operations, as well as to the most transcendent calculations; the most rational, because it goes back to the time when man learnt to count on his ten fingers.

Not many years ago the learned made use of Latin to transmit to cultivated nations the fruit of their labours and researches; but if the study of modern languages is now so general as to render this unne-

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No. I.
Report from
the Society at
Abbeville.

cessary, there remains still a necessity for a mode of translation for the perfect understanding of commercial, economical, or scientific treatises, in which the numerical quantities are differently represented. A universal system of weights, measures, and values, would then render a signal service to Commerce, to Science, and the Arts; and it is most desirable that England, whose produce is immense and relations unbounded, should consent by her example, and induce the nations which are behind others, to adopt a principle pronounced by the learned La Fontaine to be one of the greatest blessings for mankind.

It must be admitted that the masses of the people show repugnance in changing deeply-rooted customs; but this repugnance is neither invincible nor of long duration, as is evident from the experience of France and those nations which have followed her. Besides, we are not entirely exclusive; it seems to us, that the yard English lengthened in a slight degree might serve as a type of the English measures, as the *mètre* served as a type of the French measures; and as to coins, we do not think it necessary that they should be struck from moulds in all respects identical. Their real value being that of the gold and silver they contain, we think it would suffice to decimalize their fineness and to render their weight uniform. Thus taking as a basis the law of the 28th March, 1803, which fixes the legal fineness of the French coins at $\frac{835}{1000}$ fine and $\frac{165}{1000}$ alloy, the English sovereign, which now represents 25*l.* 3*s.* 6*d.*, might, with a slight diminution in weight and fineness, remain current at the exact value of 25 francs. It is no less evident that, if this plan were adapted to the coins of all countries, these coins would soon cease to be merchandise on speculation, and commerce would find itself thenceforward exempt from the heavy tax imposed upon it by the exchange, the agio, and the commission.

The principle then once admitted, it is for Governments to take such measures as they shall judge most efficacious to arrive at the speedy realization of a system, which is rendered indispensable both by the more rapid communication and by the more advanced civilization of the world.

(Signed) E. PASNIER,
Vice-President of the Society of Emulation,
formerly Mayor of Abbeville.

M. E. Pannier's Report was read, on the 22nd instant, to the Imperial Society of Emulation, and was unanimously approved.

Abbeville, Nov. 24th, 1855.

I. BOUCHER DE PERTIUS,
President of the Society.

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No. I.
M. Chevalier's
Answer to
the Circular
Letter.

3. Reply to the Circular Letter by M. Michel Chevalier, Member of the Institute, Professor of Political Economy in the College of France, author of *La Monnaie*, and of many other celebrated works on Political and Monetary Science.

(Translation.)

Paris, Nov. 26th, 1855.

DEAR SIR,

I have not yet answered the circular letter, which I received from the English Committee, relative to the adoption of a uniform system of weights and measures. It is a duty, nevertheless, of which I must acquit myself.

The resolution adopted to effect this great international measure by the Jury of the universal *Exposition*, and the recommendations in favour of the same object, which have been inserted in the address to the Emperor by Prince Napoleon on occasion of the imposing solemnity of the distribution of Prizes on the 15th of the present month, are considerable incidents, which cannot fail to weigh much on the opinion of the European public, and must contribute in no common degree to aid the efforts made in England in this direction. My answer to the English Committee shall be brief. In France, as you know, we have adopted and possess in full vigour the Metrical System, which is the *beau idéal* of the Decimal System, since it is doubly decimal. It is so, in that the sub-divisions and the multiples follow the Decimal law; it is so, in that all the different unities,—unity of length, unity of superficies, unity of weight, unity of volume, monetary unity,—are decimally related to each other. By this double decimality, the calculations of engineers, of manufacturers, of all men of business, are simplified in a surprising degree. But these advantages of our system are so well known and so universally appreciated, that I need not, as it seems to me, insist upon them. The French system has moreover this merit, that its basis, the Mètre, is borrowed, not from any French tradition or practical fact, but from what belongs equally to all nations, from the dimensions of the Earth itself. On this account, the system recommends itself to general imitation, and already several nations have appropriated it. The sole difficulty is in the transition; but this would not be greater in England than it has been in France; for the old system of the weights and measures of France differed from the present, quite as much as the English system can do. Indeed, the transition at the present time might be more rapid, because everywhere the ideas of all classes are more open to the advantages of a similar change, and the benefits of a general approximation among civilized nations are much more recognized than they were fifty years ago. As for the method to follow in the

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the Circular
Letter.

transition with you, it would be rash in a foreigner to pretend to indicate it. You alone are in a position to judge. At the most, I should venture to say, that it would be possible to call the mètre, *yard*, and, generally speaking, that it would be found useful and convenient to retain, as much as possible, the names now in use. I need not beg you to remark, that when I take the liberty of recommending to you so openly the adoption of the Metrical System, it is not from yielding to national vanity,—a sentiment, from which I flatter myself I am entirely free, as suits the times in which we live. I recommend the Metrical System, because it is good, because it has received the sanction of usage, because it has been honoured by the formal adhesion of several states, and also because it has been determined upon with the concurrence of all the nations which, at that period, were at peace with France. That England did not co-operate, was owing to her being engaged against France in a war, the fury of which was the last and deepest ebullition of a hatred now abjured and for ever by these two great nations. But before the war, the co-operation of the English nation had been solicited in the most honourable terms for the two parties by reiterated decrees of the Constituent Assembly. Believe, dear Sir, in my sentiments of high consideration.

MICHEL CHEVALIER,
Un des Présidents du Comité Français pour
l'Uniformité des Poids et Mesures.*

* In private letters to me of an earlier date than that of the Circular, M. Chevalier expresses himself as follows:

(Translation.)

April 23rd, 1855.

I heartily congratulate you, dear Sir, on your efforts to procure the introduction of the Metrical System into your great nation. You would thus render a signal service to your countrymen, who would see all their calculations simplified thereby, as if by enchantment. It would, moreover, be a marked approximation among civilized nations; for the adoption of the Metrical System by Great Britain would decide the question of its adoption by the rest of the world.

DEAR SIR,

June 22nd, 1855.

I have received through your kindness the *Morning Chronicle* of the 13th instant, containing the discussion (in the House of Commons) on the Decimal Coinage. I observe, that Mr. J. B. Smith has distinguished himself by the comprehensiveness of his views. He has rightly conceived, that the reform would signify little, if it were confined to money, and that it ought to include weights and measures, so as to cement the union and harmony of civilized nations. In this he has done himself honour by adopting your excellent thoughts. Honour be to him for it! Success will one day be his reward.

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No. I.
Answer of
Signor Mignucci to the
Circular
Letter.

4. Answer of Signor I. F. Mignucci, of Corsica.

The system of Measures, Weights, and Coins, adopted in Corsica, is the Metrical. By employing the data of geometry and natural philosophy, the distance from the Pole to the Equator has been measured. The ten-millionth part of this distance has been assumed and called a *mètre*. All the measures of length, &c. &c., are related to one another, being derived from the *mètre* as the fundamental unit.

It would be superfluous to compare this system with the English method, which is so complicated. Such is the good sense of the English nation and of their statesmen, that they cannot fail soon to complete the great undertaking begun in 1834, of abolishing all local measurements in order to adopt a uniform system.

I do not think that there are any serious obstacles to the adoption of an international system. The only obstacle is ignorance of the advantages of the French method. Undoubtedly the time is yet remote when Governments will exchange only scientific instead of diplomatic notes. But I believe that well-informed and well-educated men (*les savans*) by their memoirs, and the press by articles in the Journals and Reviews, will not delay to awaken the attention of the public, and to direct the views of the Governments to this grave proceeding.

Meetings, petitions, agitation by the press, communication between persons of talent and education, are in my opinion the only means of arriving, no doubt somewhat slowly, but assuredly, at the adoption of a uniform system. The public opinion will oblige the Governments to adopt the Metrical System.

5. Answer of M. Georges Clermont, of Verviers in Belgium.

(Translation.)

You are, no doubt, aware that the system of Coins, Weights, and Measures, in use in Belgium, is the same as the Metrical System, which is employed in France. This system is not French, and ought not to excite opposition among other nations. It was developed, discussed, and admitted, by the learned men of several nations assembled in congress for the purpose, who directed all their efforts towards the adoption of a system, which might have a *truly cosmopolitan character*. With this view, the *ascending* terms of this system were borrowed from the Greek, *Deca, Hecto, Kilo*; and the *descending* terms from the Latin, *Deci, Centi, Milli*.

In my opinion, our efforts should be directed towards endeavouring to bring this system into general use, because it is a reasonable one, and already known, if not practised, in various countries.

Answer of
M. Clermont,
of Verviers.

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the Circular
Letter.

England, in adopting the Metrical System, will keep the Pound sterling, to which she will give the fixed and immutable value of 25 francs. She will keep, also, the shilling; only she will reckon 25 shillings to the pound instead of 20, so that the new English shilling will be of exactly the same value as a franc. The new shilling will be divided into pieces of 10 and 20 to the shilling. These pieces will be the same as the 10 and 5 centimes of France.

The United States of North America will retain their dollar, to which they will attach the precise value of 5 francs. It will be desirable that the dollar should be divided into pieces of a fifth of a dollar. Thus the fifth of a dollar will bear the exact value of the franc; and this might be divided, like the new English shilling, into pieces of 10 and 20 to the fifth, which will be thus of the value of the French pieces of 10 and 5 centimes.

Every other country will, by analogy, conform to the Metrical System, and in the course of some years it will be universally adopted. This will be of great advantage to industry, and commerce, and to humanity in general.

6. From M. Hippolyte Peut, General Secretary.

(Translation.)

In the pamphlet which you intend to publish, it will be of essential importance to prove, that the Metrical System is not a French system, but a natural, scientific, and universal system, in constructing which all the enlightened nations of Europe, England as well as the rest, either assisted, or were allowed the opportunity of assisting. If the committee of *savans* appointed for this purpose, had included English engineers or mathematicians, you would now have had the Metrical System. In order to preserve its universal character, and to avoid all semblance of a pressure from France upon other countries, its authors scrupulously avoided all French names, and borrowed none from the Greek and the Latin, which, being dead languages, were perfectly neutral. If these facts were generally known, they would dissipate three-fourths of the difficulties which ignorance, prejudice, and a false national susceptibility, oppose to the reception of this system throughout the civilized world. We live in an age when all petty mistrust, jealousy, and hatred, ought to cease,—sentiments which have so long checked the progress of civilization by making every nation regard its neighbours as natural enemies, whom it should carefully abstain from copying, whereas we have much to gain by multiplying our relations with other countries, and by strengthening the bonds of that grand and fruitful fraternity of nations, which is destined to renew the face of the earth. As soon as anything is found

Answer of
M. Peut.

The Metrical
not exclusively
a French,
but a universal
system.

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M. Peut's
Answer to
the Circular
Letter.

to be good and useful, it no more belongs to this or that country; it is part of the vast domain of humanity: each of us ought to esteem himself honoured and happy, because one of his own kindred and likeness has struck out a spark of divine fire to contribute to the benefit of the whole race. Guttemberg was a German; Watt, an Englishman; Fulton, a Frenchman; Franklin, an American. Has any nation been prevented from applying to its own advantage the discoveries or ideas of these illustrious men? Why then should any nation henceforth refuse to adopt a system, the superiority of which has been established by the experience of about ten other nations, which have united in employing it? Is it that the material advantages, which would result from its general acceptance, are not sufficient to effect in its favour what has been effected in favour of all inventions, which have been from time to time brought forward in every way to lighten labour and to aid production?

Half-measures
of no use.

Developpe these ideas forcibly, my dear Sir, and I doubt not that you will succeed in overcoming the obstacles which oppose your efforts. But let there be no half-measures. It would be better for England to keep her weights, measures, and coins, such as they are, than to incur all the inconveniences attendant on a change, which would not procure for her any of the advantages of a complete uniformity with the States of Western Europe, and would perhaps become an insurmountable obstacle to the realization of this immense advancement.

Now for a few words in answer to the questions in your lithographed letter.

Principle of
the Metrical
System.

First.—The principle of the Metrical System is a unit found in nature, from which all the other units are derived, so that, if it were lost, it might be recovered from each of the others. This one basis and concatenation of parts will under all circumstances constitute the superiority of the Metrical System.

Means of ex-
tending it.

Answer to Question the Second.—To act by means of the press, by meetings and pamphlets, and by instruction, showing to all persons the incalculable social benefits, political and economical, public and private, which would result from the use of an international uniform system.

Answer to the Third.—None. There is no insurmountable obstacle. The chief obstacle resides in national prejudices, and in that blind self-love which urges a people to imagine, that it would be an indignity to borrow from its neighbours a just, good, and useful thought. An association composed of eminent men, as yours is, will certainly triumph over it by developing the ideas which I have expressed, together with many others, which it will be able to discover and to enforce much better than I can do.

7. Answer to the three Questions by Dr. Souchay, an eminent civilian and politician at Frankfort-on-the-Maine.

(Translation.)

Nov. 22, 1855.

Appendix,
No. I.
Answer from
Dr. Souchay,
of Frankfort.

The great anarchy which prevailed in the Monetary system of Germany, and the great difficulty of adopting either the system of Austria or that of Prussia, induced the kingdoms of Bavaria and Wurtemberg, the Grand Duchies of Baden and of Hesse, the Duchy of Nassau, and the Free City of Frankfort, to associate together on the 25th of August, 1837, in order to form a new and common Monetary system. The value of the coins in circulation, and the custom of the inhabitants of the above-named countries to make use of a coin called a Gulden, and divided into sixty Kreutzers, was the basis of this system. It was never considered as definitive, but only as a transitory measure intended to establish some order, whilst the above-named States watched the course of events, with a view to decide which would be the best definitive system in their peculiar situation. They strike 24½ silver florins to the Cologne marc of pure silver. They also coin ½ florins = 30 kreutzers, and pieces of 6 kreutzers, 3 kreutzers, and 1 kreutzer. The kreutzer has the value of 4 hellers, which are of copper.

The proposals of Austria, which are at present spoken of, and which approach very near to the Metrical System of France, and even to the coinage of England, may perhaps lead the States above mentioned to a change of system in the same direction. It is expected that Austria will propose to strike 21 florins to the Cologne marc of pure silver. A florin will then have the exact value of 2½ francs. Moreover, they mean to strike gold pieces of about the value of a sovereign, or 25 francs; but this gold coin will have no fixed value.

The system of Weights and Measures legally adopted at present in Frankfort is the Metrical System; nevertheless, many other weights and measures are in use for different objects, which custom has introduced, and which will probably be lost with time and by the operation of a contrary custom.

Answer to the 2nd Question.—According to my opinion, the only way is to adhere to the Metrical System, and to labour for its general reception.

Answer to the 3rd Question.—No; it only requires zeal and perseverance. This system has made great progress in Germany during the last twenty years. It is universally admitted that it is the best, and every change that has taken place has been in its favour. The difficulties which oppose its general introduction are merely financial, every change affecting so many interests. But wherever a change is made, the Metrical System will be adopted.

Appendix,
No. I.

Answer from
Mr. Jordan,
of Coblenz.

8. From A. Jordan, Esq., Merchant and Banker at Coblenz.

Coblenz, 30th November, 1855.

MY DEAR SIR,

I beg to acknowledge receipt of your letter of 17th instant, and the honour you have done me in wishing for my opinion in a matter of such world-wide importance as the equalization of Measures, Weights, and Coins.

However insignificant my opinion may be, it is in favour of the object you have in view; and I venture to answer the three Questions put, the first, by referring simply to the numerous well-known books on German Measures, &c.; the third, by saying that I do not consider the difficulties insurmountable. How to attain the desired end, is the second, the cardinal question, to which I may confine myself.

The basis ought to be the Decimal System. Let us apply it first to Coins, and first again to those of Germany. Prussia and Austria have for some time been engaged in attempts to assimilate their coinage. The last time negotiations were broken off, because Austria insisted on a gold standard; but now it is ready to join in the silver standard. I am for a silver standard, and some years ago I had much conversation and correspondence on the subject with the late Earl of Stanhope, who published articles in favour of it in the newspapers. The silver standard prevails all over Europe, except in England. Austria is said to be willing to adopt what we call the 21 gulden fuss, which is in use in Prussia, and in January a conference is to meet. In order to assimilate Prussian and Austrian coins, the Chamber of Commerce of Coblenz, in support of that at Cologne, lately proposed to Government to strike a coin of $1\frac{1}{2}$ thaler, = 2 Austrian florins or a double gulden, again = fl.2½ Rhenish of fl.24 foot, = 5 francs in France, Belgium, Switzerland, and part of Italy, = 4s. English, = to 1 dollar in Spain, and in South and North America.

Besides, I am for a gold coin of 5 such dollars, or one pound sterling, or 25 francs. Both coins would answer everywhere.

I think it would encourage economical habits to take a small coin as the unit in the business of every-day life rather than a dollar, a coin to correspond with a shilling or franc.

Take a shilling sooner than an English florin, call it a "new mark" (a name convenient in all languages and of old date), and divide it into cents. As shown above, it might easily be made to tally with the coins of the chief nations of Europe and the rest of the civilized world. The first subdivision of a Prussian dollar is now $\frac{1}{2}$, or 10 groschen, equal to 1s. English, and two of them to one gulden Austrian.

As soon as Austria has agreed with Prussia, the States of Southern

Assimilation
of German
coins.

Germany, which have now the fl.24 foot money, will join the former in that of the fl.21 foot. Already, by the Munich Convention, have they engaged not to coin any more crown dollars of fl.2. 42krs.

I really think, with such a basis, competent men do not require Ariadne's thread to solve the problem as for Coins.

With respect to Weights, the variety and confusion is greater than with coins, and a tabula rasa probably the best.

The Decimal system might be adopted. It is in use in the Zollverein, at the Custom-house at least, where 50 kilogrammes are called a zoll zentner. A kilogramme may be called a new pound. There cannot be great obstacles to introduce this system generally.

In regard to Measures, a Mr. Henschel, after long years' study, has just published a book at Cassel, a translation of which appeared at Paris, at Bohne and Schulz's, where, in preference to the Metric system, he recommends another, founded upon the human step, and shows his system applicable to Weights also.

In such reforms the utmost perfection must be obtained, to avoid mending and confusion. A sound system, by its intrinsic usefulness, will work its way against all prejudices; and so I wish you and your friends success. You will be benefactors of mankind, help on civilization and fraternity mightily.

I remain, my dear Sir, yours respectfully and truly,

A. JORDAN.

9. From Dr. Otto Hübner, Keeper of the Statistical Archives at Berlin. Few men have ever been more consulted, or had better opportunities of judging than this eminent statist.

From Dr.
Hübner, of
Berlin.

(Translation.)

Answer to the 2nd and 3rd Questions.

There is at present the nearest approach to uniformity in weights.

France, Holland, Sardinia, and Belgium, use a quintal of 100 kilogrammes. Denmark, Baden, Hesse-Darmstadt, Saxony, and Switzerland, use a quintal of 100 pounds, = 50 kilogrammes. The Zollverein and Austria use this quintal at the Custom-houses, the Railroads, and the Post-offices. Prussia has decided on adopting it entirely from Jan. 1st, 1857.

The experience of these countries might justify the proposal, that other governments should in like manner adopt in the first place the quintal of 100 or of 50 kilogrammes at Custom-houses, Railroads, and Post-offices, since they need not fear the indolence of the masses of the people in those transactions, in which they are not directly concerned.

Appendix,
No. I.

Mr. Jordan's
Answer to
the Circular
Letter.

German
Weights and
Measures.

Proposal to
equalize
weights in the
first instance,

Appendix,
No. I.
then Coins,

As to coins, supposing uniformity to be established in weights, and each coin to be marked with its weight, it would be sufficient as a commencement that all the governments should adopt the same proportion of alloy and abandon the remedy. It will not then be requisite to have always the same divisions and sub-divisions. Every amount, every number of coins, will be understood to be only a certain number of pounds of silver or gold of the same fineness, and we shall thus avoid the opposition of the multitude.

Measures
last of all.

As to measures of length and capacity, the difficulty of a reform is much greater than in weights and coins, since in Germany there is no general plan. Not only has each petty state its own ell and its own corn measure, but in these states there are cities or provinces, which retain their ancient systems in opposition to that established by law. Usage has even in the same city established different ells for different kinds of cloth. At present, I think it impossible to do more than to induce men of science and education in all countries to make their calculations according to certain uniform measures. Theory will perhaps raise objections against the mètre. It is, nevertheless, one of the most exact measures of length, and already established in use, French goods being almost universally sold by the mètre, at least in wholesale transactions.

Sir C. Fox.

10. From Sir Charles Fox, C.E., of London.

Hotel Bristol, Sept. 23rd, 1855.

Having extensive works in course of execution in many parts of Europe, I am able to state, that uniformity in weights and measures would be a source of very great convenience.

Count Arriva-
bene.

11. Count Arrivabene, in a letter dated 9th December, expresses great interest in the object, and in answer to the first Question sends the following work, recently published by Belgium:

Loi sur les Poids et Mesures, suivie des Arrêtés Royaux et des Instructions Ministérielles qui en règlent l'exécution. Bruxelles, 1855.

Robert Koch,
Esq.

12. Mr. Robt. Koch, British Consul at Frankfort, sends the Frankfurter Geschäfts-Handbuch, or Trades Manual of Frankfort, A.D. 1845, containing complete information on the Measures, Weights, and Coins, by J. F. Hauschild.

13. From Professor Gallenga, Member of the Chamber of Deputies at Turin, author of works on Italian History and Literature.

Appendix,
No. I.
Professor
Gallenga.

Kensington Gate, Nov. 30th.

Piedmont has done all that could be done for the Decimal System. As France, Belgium, Switzerland, Parma, and Sardinia, are now united, I think England can do no better than join them.

No. II. See above, p. 8.

The following account of the discussion at the meeting of the Society of Political Economists is abridged from the *Journal des Economistes* (Paris, Guillaumin, 14, Rue Richelieu), for last September.

Appendix,
No. II.
Meeting of the Political
Economy
Society.

The Circular Letter having been read by M. Garnier, the Secretary of the Society, M. Horace Say, the President, first called on Mr. James Yates, to explain the designs and wishes of those who had signed the letter.

Mr. J. Yates said, that his friends and he, having been struck with the fact, that as relates to the system of Money, Weights, and Measures, England is much behind other civilized nations, wished to aid their country to emancipate itself from this position, by showing the advantages of the system adopted in France. More than sixty years ago France, in a most generous and enlightened spirit, invited the concurrence of other nations, who responded to the call, with the exception of England. After the war, the prejudice still continued in England, whilst other nations, such as the Netherlands, Switzerland, and Piedmont, made the Metrical System more or less their own. This prejudice exists not only in the mind of the people, but in the minds of those whom their education ought to have enlightened. It rests on a feeling of nationality ill understood, and on an ignorance of the nature and advantages of the French system and of the circumstances which led to its adoption. The adversaries of the new system appeal to the impossibility of its application. The design of the Circular Letter was to collect evidence on this question, and with this view it was thought desirable to profit by the meeting of the Statistical Congress. Those who signed the letter hoped in this way to furnish some information to the Royal Commission, composed of Lord Monteagle, formerly Chancellor of the Exchequer, of Lord Overstone, formerly a very eminent banker, and Mr. Hubbard.

Address of
Mr. J. Yates.

Appendix,
No. II.
Meeting of
the Society of
Political Eco-
nomists.
Address of
M. Vattemare.

M. Al. Vattemare invited the attention of the meeting to a memoir, written in 1853 by Mr. William Mann, to extend to the United States the advantages of the Metrical System and obtain adhesion to it throughout the Union. This memoir, reprinted and distributed among the members of the Statistical Congress, contains very circumstantial details on the Metrical System, its nature and the advantages it offers, as well as on the means of extending it. M. Vattemare referred to this memoir for what he would have to say on this interesting subject. He would give all his efforts to the propagation of the Metrical System, because he sees in its adoption an excellent auxiliary to the development of the international intellectual exchanges, to which he has devoted his life.

M. Visschers,
of Brussels.

M. Visschers, member of the Central Commission of Belgian Statistics, was anxious that every country should adopt for itself some uniform system of measures with decimal divisions, for it appears to him difficult to introduce the Metrical System into all countries. It would be a great progress, if instead of several scores of units of weights, measures, and coins in Europe, there were only five or six units, or perhaps three or four, with the decimal subdivisions, so convenient in calculations.

Mr. Sumner,
of the U. S.,
North Amer-
ica.

Mr. George Sumner, of the United States, far from seeing advantages in this transitional method, saw in it the serious inconvenience of putting off to a later period the adoption of the rational system, which France has pursued for sixty years, and of which other nations may avail themselves with the same advantage. This transitional system seemed to have gained favour in England; but we must combat it on this account, that there will be as much trouble in making the transitional system succeed, as the more rational one. Nothing is more fatal to true progress than half progress. On the subject of coins, for example, some have talked of preserving the sovereign as the unit. To what purpose? The franc, which has moreover the advantage of being equal nearly to tenpence and to the twenty-fifth part of the sovereign, is preferable, since other nations have already adopted it, after France. But for this false idea, the United States would have already made use of the franc, instead of the dollar, which is of different kinds, and which has not a value absolutely exact. The fluctuation of the exchange has been objected, said Mr. Sumner, to the uniformity of coins. But here we are only treating of a percentage, which will be more easy to calculate on a simple value than on complicated values, and moreover this exchange exists between the different parts of the same country; it exists amongst the thirty republics of the Union, it is seen in France between the great centres of population. We should labour at the spread of the complete sys-

Question of
the exchange.

tem. It is as easy to do a thing well as to do it ill. The decimal division is no doubt very excellent; but the Metrical System is still better, presenting great advantages, which England, the United States, and all countries may profit by.

M. Berg, of the Academy of Sciences in Stockholm, explained, that Sweden has just adopted the Decimal System for weights, measures, and coins, and that it will be in action in January, 1856. They have not adopted the Metrical System in Sweden for different reasons; first, because they did not dare to attack the difficulties arising from customs and prejudices; secondly, because the Savants themselves objected to the absolute exactness of the French mètre.

M. Cogels, of Antwerp, Belgian Senator, gave as an instance of the difficulties which the Metrical System has had to overcome, what has occurred, and is still passing, in Belgium. The system was introduced into this country by the Republic; it has been maintained by the Dutch-Belgian government, and by the revolution of 1830; and notwithstanding this perseverance, there are still difficulties to surmount. M. Cogels thinks also, that the Metrical System might be improved in some points; he mentioned as an imperfection in the system, the weight of the gold pieces, which is represented by a fractional not a decimal number.

M. Cogels, of
Antwerp.

M. Hippolyte Dussard, formerly Councillor of State, thinks, that in spite of difficulties and imperfections the Metrical System is suited to the intellectual habits of mankind. They will perceive, that they ought in such a case to renounce all mean, petty objections arising from national self-love, and that the difficulties of the transition will be recompensed by immense advantages. The want of uniformity is universally manifest; and it is to satisfy in certain respects this requirement, that a great financial establishment, the *Credit Mobilier*, is going to create a general paper currency. In the exclusive adoption of decimal subdivisions M. Dussard saw only a moderate advantage, since the ancient subdivisions familiarize the mind with the calculation of aliquot parts, the use of which is so frequent in actual practice.

M. Dussard.

M. Joseph Garnier agreed with M. Dussard on the necessity of making young persons familiar with the calculation of aliquot parts. Notwithstanding the advantages of the decimal subdivision, it ought not to be adopted too exclusively. The subdivision into halves, quarters, eighths, and into thirds, sixths, twelfths, &c., is equally natural with the decimal subdivision, and, in certain circumstances, is more convenient, and better accommodated to practice.

M. Garnier,
of Paris.

The excellence of the Metrical System consists not so much in its decimal subdivisions, as in the simple relations, which are established between the several units. The unit of itinerary measures, employed

Mutual rela-
tions of the
several units
in the Metrical
System.

Appendix,
No. II.
Discussion at
the Society of
Political Eco-
nomy.
Address of
M. Berg, of
Stockholm.

Appendix,
No. II.
Discussion at
the Society of
Political Eco-
nomy.

to reckon distances by land or sea, is a decimal multiple of the fundamental unit of length, the mètre. In superficial measures, a glance of the eye shows the relations of *ares* and *hectares*, square *mètres* and square *kilomètres*, to the *mètre* and to one another. The transformation of measures of capacity into volumes, and the reverse, is effected with equal ease; the figure being known, which denotes the density of a solid or of a liquid, its weight might be at once converted into a measure of capacity, or of volume; even sums of money might with the greatest ease be employed instead of weights. In this respect the Metrical System far surpasses every other. In every country certain advantages might be secured by adopting a unit for each kind of measurement, and by taking its decimal multiples and subdivisions; but the Metrical System alone possesses that simplicity in the mutual relations of all its parts, which is practically so valuable in the sciences, the arts, and commerce.

Cosmopolitan
character of
the Metrical
System.

Alluding to the cosmopolitan character of the system, M. Garnier said, The law which established it definitively, ordained the publication of a medal with this motto, "A tous les temps, a tous les peuples,"—For all times and for all nations. He thought that the so-called "*Système Usuel*," adopted under the Empire, had greatly retarded the progress of the Metrical System. With regard to the retention of old measures, he stated, that, although the fish-wives of Marseilles still use the Phœcean pound, they understand its relation to the kilogramme.

M. Dupuit, Chief Engineer of the City of Paris, regretted, that the choice of units in the Metrical System had been faulty. It was found troublesome to reckon centimes by the head, and hence the *son* continued in use. In case of an international Congress, it would be desirable to revise these units.

M. Clermont, of Verviers, highly appreciated the advantages of the Metrical System, the full evidence of which was afforded in the daily transactions of trade and commerce. No effort should be spared to extend it, because it is so well combined.

M. Peut was struck with the character of universality in the Metrical System. It was not French, but cosmopolitan. France indeed had first adopted it; but it was equally suited to all nations. If it were deemed expedient to modify it in some points, France ought to be the first to receive the proposed corrections.

M. Horace Say closed the discussion by observing, as the result of the conversation, that a general desire was felt for the adoption of a uniform decimal system of weights and measures, and that, if any one of the most important nations took the initiative, the others would soon follow.

Cose of the
discussion by
the President

Appendix,
No. III.

No. III. See above, p. 9.

A Report to Congress by Robert Morris, Financier of the Confederation, presented in 1782, contains this observation:

Reports to
Congress on
Decimal
Coinage.

Although it is not absolutely necessary, yet it is very desirable, that money should be increased in a decimal ratio; because by that means all calculations of interest, exchange, insurance, and the like, are rendered much more simple and accurate, and of course more within the power of the great mass of the people.

Another Report, presented in 1784, by Jefferson, on behalf of a Special Committee, contains the following remarks:

The most easy ratio of multiplication and division is that of 10. Every one knows the facility of decimal arithmetic. Every one remembers that, when learning money arithmetic, he used to be puzzled with adding the farthings, taking out the fours, and carrying them on; adding the pence, taking out the twelves, and carrying them on; adding the shillings, taking out the twenties, and carrying them on; but when he came to the pounds, where he had only tens to carry forward, it was easy and free from error. The bulk of mankind are schoolboys through life. Certainly, in all cases, where we are free to choose between easy and difficult modes of operation, it is most rational to choose the easy.

Acting under the advice of Jefferson, the Government of the United States adopted the Spanish dollar as their unit, because it was imported in large quantities, already employed as the principal measure of value, and therefore capable of being made the basis of a monetary system with greater facility than any other familiar coin. In the descending series of coins, they carried the decimal principle as low as the cent, or 100th part of the dollar, but abandoned it in the lower denominations of half-cents and quarter-cents.

No. IV. See above, p. 11.

Appendix,
No. IV.

The following extracts contain the principal part of the Report.

Memorial
from the Ame-
rican Geogra-
phical and
Statistical
Society.

Every book of travels is rendered more or less obscure by referring to measures, which convey no impression to the mind of the reader;

Appendix,
No. IV.

Memorial to
Congress from
the American
Geographical
and Statistical
Society.
Inconven-
iences result-
ing from
diversity of
measures.

Mere approxi-
mation of
little use.

Absolute
density to be
aimed at.

for, though aware of the relation which the terms employed bear to those with which he is conversant, he is not disposed to stop and make the calculation necessary to form an accurate impression upon his mind. * * * But, if from the popular reader we turn to the student or the merchant, the difficulties are immensely enhanced. The certainty which should prevail, is clouded in doubt; and, if doubt is dispelled, it is the result of frequent and tedious calculation. In the Treasury Reports of articles exported, the number of measures introduced is great—gallons, quintals, barrels, kegs, tons, tierces, pieces, packs, &c.; and in the articles imported, upwards of five thousand various weights and measures are recognized, by any one of which articles may be invoiced into this country.

The advantages of an approximate or of a general uniformity being conceded, the question arises as to the extent of alteration which should be proposed, and the difficulties connected with the substitution of the new measures. Should it, on inquiry, be found that European nations are willing to adopt some common standard of measurement, which must, however, involve a general abandonment of the measures in popular use, it is evident there is no advantage in limiting the change, which the whole system is to undergo. If the weights and measures now in the hands of the community can be made available, that arrangement should be adopted as most economical and convenient; but, if it is found that they are not available, the more decided and perceptible the alteration is, the less will be the risk of error and confusion. At present we perceive the ambiguity which arises from the use of the term *pound* (avoirdupois and troy); of *gallons*, containing respectively 270 cubic inches the corn gallon, 280 inches the ale gallon, 231 the wine gallon; of *hundred-weights* of one hundred and one hundred and twelve pounds. The introduction of new measures, therefore, nearly equal to those displaced, should be avoided; and, if any change is deemed advisable, it should be a radical one, based on scientific principles and adapted to the wants of existing civilization. No nation or individual can attempt the work of creating a general system. It must necessarily be the work of combined action, and, consequently, the prospect of obtaining the candid examination of the subject, in the present state of political relations with the principal commercial nations, must be regarded as an important element in considering the propriety of proposing, at the present time, to make the subject one of public discussion. On the suggestion of M. Talleyrand, Louis XVI. was requested by the Assembly to write to the King of England, proposing the appointment of a joint commission to examine into the propriety of establishing a system of measures to be adopted by both

nations; but the state of political feeling then existing, and the jealousy of everything emanating from the Constituent Assembly, probably prevented the scheme from being candidly considered, and no notice was taken on the subject at that time by the British government. Now, however, no such jealousy exists; but a most harmonious feeling pervades the three leading commercial nations, and it is well worthy of consideration, whether this is not an appropriate time for united national action. By recent parliamentary documents, it appears that England is about to revise her system of weights and measures, and is examining the practicability of introducing a more uniform decimal scale; and it would conduce greatly to the convenience of the commercial world, if the alterations introduced were of a character suitable for universal adoption.

Under these circumstances your Committee would suggest the propriety of presenting to Congress a memorial, praying it, in view of the difficulties which still surround the whole subject, to propose the appointment of a joint scientific commission by the United States, England, and France, and by such other nations as might choose to unite, to propose for general adoption such a system as might meet the wants of the commercial community, the politician, the geographer, the scientific inquirer, and the public. * * *

It may not be out of place to suggest, that, should such scientific commission agree upon any system intended for general introduction, its adoption might be greatly promoted by allowing a certain reduction on the duties to be paid upon articles, which were invoiced according to the proposed system.

No. V. See above, p. 13.

M. Peut edits the *Annales de la Colonisation Algerienne*. He has also recently issued the prospectus of a periodical under the title, *Revue Internationale Universelle*, which will be devoted to the promotion of uniformity in Measures, Weights, and Coins, as well as in every other possible arrangement. It promises to be a work eminently entitled to the support of every philanthropist.

May I be permitted here to record M. Peut's first efforts and my early connection with him in promoting attention to the subject of uniformity in Measures, Weights, and Coins. At the Peace Congress, held in Paris, A.D. 1849, which was

Appendix,
No. IV.

Memorial to
Congress from
the American
Geographical
and Statistical
Society.

The present
epoch favour-
able for the
joint consider-
ation of the
subject by
Great Britain,
France, and
the United
States.

Appendix,
No. V.

M. Hippolyte
Peut's devo-
tion to the
object of the
Association.

Appendix.
No. V.

a most brilliant and successful meeting, M. Peut delivered a powerful address, in which he represented the propriety of aiming at "the uniformity of weights and measures, coinage, and postal duties." When preparations were making for the Great Industrial Exhibition in Hyde Park, it appeared to me, that a good opportunity was afforded for making the Metrical System more generally known by a complete display of the Weights and Measures belonging to that system, in all their variety, as formed out of various materials and adapted to all the requirements of trade and commerce, as well as of science and art. I wrote to M. Peut in explanation of my views, and he published my letter in *La Patrie* of Dec. 9th, 1850, together with his own eloquent and vigorous observations. My desire was accomplished by the exhibition in the Crystal Palace of complete sets of the Measures, Weights, and Coins, of the Metrical System. The principal exhibitors were Messrs. Deleuil et Fils, of No. 8, Rue du Pont de Lodi, and Messrs. Collot, Frères, of No. 41, Rue de l'Ecole de Medecine, in Paris. The French Government sent a standard Mètre both in brass and in platinum. One of the sets of Weights and Measures was purchased by Henry Johnson, Esq., and presented by him to the Society for the Encouragement of Arts, Manufactures, and Commerce, in whose Museum, John Street, Adelphi, it is preserved.*

An important service was rendered at the same time by the Rev. Henry Richard, Secretary of the Peace Society, by publishing in the *Herald of Peace* for June, 1851, an account of M. Peut's exertions, concluding in these terms:

For our own part, we heartily wish well to this idea of uniformity in weights, measures, and moneys. We believe that among those who are engaged in international commerce, the want of it occasions immense trouble, cost, and embarrassment; and we hail every measure that would tend, as this most assuredly would, to facilitate the practical recognition of that sublime declaration of the divine oracle, that "God hath made of one blood all nations of men to dwell upon the face of the earth."

* This Society has uniformly aided the discussion of the question on Decimal Coinage in the most liberal spirit. After the close of the Exhibition, its Council presented the following Memorial (see Appendix, No. VI.) to the Lords Commissioners of H. M. Treasury.

Exhibition of
Measures,
Weights, and
Coins, in the
Crystal Palace
A.D. 1851.

Appendix,
No. VI.

No. VI.

Memorial of the Council of the Society for the Encouragement of Arts, Manufactures, and Commerce, to the Lords Commissioners of Her Majesty's Treasury,

Memorial of
the Society of
Arts.

Sheweth,

That your Memorialists hear with great satisfaction that Her Majesty's Government have under their consideration the question of introducing into this country a system of Decimal Coins, Weights, and Measures, which your Memorialists view as a most important step in advancing the Arts, Manufactures, and Commerce of the country, to the promotion of which the efforts of your Memorialists are directed.

Your Memorialists consider that it is a question not only of national importance, but extends to the future mutual relations of all countries in the world, and they therefore beg leave to submit the following views, which have been advanced in this Society, as well worthy the attention of Her Majesty's Government.

The progress of science and commerce is gradually rendering different nations more and more necessary to one another, and the growing education and intelligence of the people are every day sweeping away the feelings of personal antipathy, which formerly existed between nations at a time when very few years ever passed without their being engaged in hostilities.

The Exhibition of 1851 was a striking example of the extent of the sentiments of goodwill among different nations, which that event called forth. The variety of the produce of their industry shown together in London must have proved to the most unthinking, that the very differences of race, character, or genius which may exist among nations, are only means appointed by Providence to render them dependent upon one another for supplying most of their outward wants.

That Exhibition having sprung from this Society, has induced many of its members to direct their attention to an improved system of international relations, and they would desire to use every opportunity of drawing attention to the numerous benefits, which may yet accrue to the whole world by facilitating personal and commercial intercourse between various nations.

It has been suggested that uniformity in Coins, Weights, and Measures would be of the greatest importance in this respect to commerce; and, in the case of Weights and Measures, would at the same time greatly facilitate scientific research.

Appendix,
No. VI.
Memorial of
the Society for
Encourage-
ment of Arts,
Manufactures,
and Com-
merce.

As, therefore, the Government must necessarily be engaged in researches as to the best means of accomplishing the change to a Decimal System of Coins, Weights, and Measures, it is respectfully submitted to them, that it may be of use to inquire whether, by arrangement with neighbouring nations, some steps may not be taken which may tend eventually to an adoption of a uniform system throughout the world.

It is very probable that such a measure will be sooner or later called for so loudly by different nations, as to force it upon the attention of their respective Governments; and it is possible that the Government of this country might be forced into a second change not a great many years after that now contemplated. It is therefore well worth their consideration, whether the inconvenience of one of these changes might not be avoided by a little judicious foresight.

Even were such attempts found unsuccessful in the present state of the world, it is submitted that it would be a glorious act on the part of England making the first advances,—worthy of the nation which inaugurated unrestricted commerce, unrestricted navigation, and which invites by its Exhibitions, and by its policy, the most unrestricted competition, and therefore co-operation, among the people of the whole world.

It is further submitted, that there is nothing impossible in realizing such an idea. Several nations on the continent of Europe have already the same Coinage, and the Metrical System of Weights and Measures is still more widely adopted, and this with the greatest advantage and convenience to the inhabitants of the several countries.

It is not desired to press any particular standard upon the attention of the Government, who have all the intelligence of the country at their command; but it is considered that the views above expressed have not yet been brought forward with the prominence they deserve, and your Memorialists have therefore taken leave to submit them to your Lordships.

Signed for, and on behalf of, the Council of the Society of Arts,
EDWARD SOLLY, Secretary.

March 23rd, 1853.

NO. VII.

Appendix,
No. VII.
Meetings of
British Branch

Three Meetings of the Branch of the International Association for Great Britain and Ireland have been held in London; and, the following Resolutions having been adopted as the basis of future operations, I think it desirable to append them

to the preceding narrative. It will be observed, that they are an immediate consequence of the Resolutions which were passed at the first establishment of the Association. See above, pp. 16—22.

The Meetings referred to were held Nov. 28th, Dec. 19th, Jan. 16th.

J. B. SMITH, Esq., M.P., Vice-President, in the Chair, the following Resolutions were adopted:

1. Moved by C. Wentworth Dilke, Esq., seconded by the Rev. Alfred Barrett, M.A.:

That this Meeting regards the object proposed to be accomplished by the International Association for obtaining a Uniform Decimal System of Measures, Weights, and Coins, as likely to be very conducive to the manufacturing and commercial prosperity of the United Kingdom; to the increase of the comfort and social happiness of all classes of its inhabitants; to the progress of science and the improvement of education; to economy and good management in all internal affairs of State; to exact reciprocity in postal, fiscal, and all other pecuniary arrangements with foreign countries; and, lastly, to the permanent establishment of friendly relations and free intercourse among all the nations of the earth.

Aim of the
Society.

2. Moved by Leone Levi, Esq., seconded by Woronzow Greig, Esq., F.R.S.:

That this Meeting, on behalf of the Branch Society for Great Britain and Ireland, and in accordance with the design and regulations of the International Association, will endeavour to promote the attainment of the end proposed by exciting attention and diffusing information throughout Her Majesty's dominions, whilst the same is done by the other Branch Societies in their respective spheres, and will thus co-operate, as far as possible, in preparing for an International Congress, which shall have an official character, and shall be charged with solving the great problem which is the aim of the Association.

Means of
attaining its
object.

3. Moved by G. H. H. Oliphant, Esq., seconded by David Mocatta, Esq.:

That the Society shall consist of, 1, Honorary Members, having rendered special services; 2, Life Members, paying a contribution of Five Pounds or upwards; and 3, Subscribers, paying a contribution of Ten Shillings or upwards, which shall be due in advance on the 1st of January in each year.

Appendix,
No. VII.
Resolutions
and proceed-
ings of the
Branch for
Great Britain
and Ireland.

Members.

Appendix,
No. VII.
Resolutions
of the British
Branch.
Vice-Presi-
dents for this
country.

4. Moved by William Farr, Esq., M.D., F.R.S., seconded by Samuel Brown, Esq.:

That the following noblemen and gentlemen, having been approved by the Parent Association, be recognized as Vice-Presidents: His Grace, Richard Whately, D.D., Archbishop of Dublin; Right Hon. the Earl of Shaftesbury; John Benjamin Smith, Esq., M.P.; James Yates, Esq., M.A., F.R.S.

5. Moved by Jas. Yates, Esq., F.R.S., seconded by Peter Hardy, Esq., F.R.S.:

Honorary
Secretaries.

That Henry Astley Darbishire, Esq., of 4, Trafalgar Square, and T. C. Mossom Meckins, Esq., B.A., Barrister-at-Law, of 3, Harcourt Buildings, Inner Temple, be requested to accept the office of Honorary Secretaries.

6. Moved by James Bell, Esq., M.P., seconded by T. C. Mossom Meckins, Esq.:

Treasurer.

That George Bishop, Esq., F.R.S., of South Villa, Inner Circle, Regent's Park, be requested to accept the office of Treasurer to the British Branch of the International Association.*

Thanks were voted to the Institute of Actuaries and to the Statistical Society for the use of their apartments.

The following Address was adopted for presentation to the King of Sardinia:

TO HIS MAJESTY, VICTOR EMMANUEL, KING OF SARDINIA.

May it please Your Majesty:

Address to
the King of
Sardinia.

We approach Your Majesty as the representatives in this country of the International Association for obtaining a Uniform Decimal System of Measures, Weights, and Coins. In travelling through France, Belgium, and Switzerland, we have frequently met with coins issued from Your Majesty's Mint in excellent preservation, and employed in all monetary transactions. In consequence of the establishment of our Association, we look forward to a time when the British dominions will be embraced in a similar union, and when, under some system not yet determined, the coins which bear Your Majesty's arms and impress may be everywhere interchangeable with those

* Bankers, The London and Paris Joint-Stock Bank, 4, Princes Street, Mansion House, London.

which are issued in the name and under the authority of our own Most Gracious Sovereign.

Appendix,
No. VII.
Address to
the King of
Sardinia.

In order that the design of our Association may be carried into effect, we beg to be favoured with such aid, advice, and information as Your Majesty's Servants and Representatives may be able to communicate, and which may direct and animate us in our arduous undertaking.

We gladly embrace the opportunity with which Your Majesty has so graciously favoured us, of expressing to Your Majesty our cordial sympathy and congratulation, not only on Your Majesty's safe arrival in this island, but on the progress of Your Majesty's people in every species of civilization, and in the enjoyment of all the blessings of good government.

The object of our Association being to advance and establish this nation, together with others, in the interchange of all beneficial and friendly offices, we rejoice in the hope that our intercourse, both personally and through the medium of our commerce, with the Sardinian territories, may unite both nations more firmly than ever in the bonds of amity and peace.

Whilst we cordially concur in Your Majesty's recent appeal, that "Sardinia may continue to offer the noble example of a monarch and his people united by indissoluble ties of mutual love and confidence, maintaining inviolate the bases of public welfare, of order, and of liberty," we rejoice that the British Islands are not too remote to participate in the generous wishes and aspirations of one of the best of foreign Potentates.

This Address, having been signed by the Chairman, was sent to the Sardinian Minister for presentation to the King at Windsor Castle; and the following gracious Answer has been received from the Legation:

Londres, ce 22 Janvier, 1856.

MONSIEUR,

S. M. le Roi m'a chargé de vous remercier de l'adresse de félicitation, que vous avez bien voulu lui présenter de la part de l'Association Internationale, fondée pour obtenir le Système Décimal et Uniforme des Poids, Mesures, et Monnaies, à l'occasion de sa visite en Angleterre.

Answer of the
Sardinian
Ambassador.

S. M. a été d'autant plus charmée de recevoir cette marque de sympathie qu'elle n'a pu qu'approuver hautement le but que l'Association se propose.

Le Système Décimal Sarde est en tout conforme à celui qui est en vigueur en France, prenant pour bases le poids de l'ou et le diamètre

Appendix,
No. VII.
Answer of the
Sardinian
Ambassador.

de la terre. Il paraît donc qu'il serait à peu près superflu de fournir à l'Association le détail de ce système. Je ne doute cependant pas, la demande en étant présentée par quelque agent de l'Association à Turin, le Gouvernement de S. M. ne se montre parfaitement disposé à procurer toutes les informations désirées; et je ne puis qu'exprimer de vœux pour que ce pays se rallie complètement à un système, qui obtient de si heureux résultats en France, en Sardaigne, et en d'autres parties de l'Italie.

En vous exprimant tout le plaisir que j'éprouve en venant m'acquitter de cette mission, je vous prie, Monsieur, d'agréer l'assurance de ma considération très distinguée.

(Signed) V. E. D'AZEGLIO.

(Translation.)

London, January 22nd, 1856.

SIR,

H. M. the King has charged me to thank you for the Address of Congratulation, which you have presented to him on behalf of the International Association for obtaining a Uniform Decimal System of Measures, Weights, and Coins, and on the occasion of his visit to England.

H. M. has been the more delighted to receive this mark of your sympathy, since he could not but highly approve the end proposed by your Association.

The Decimal System of Sardinia is in all respects the same as that used in France, having for its bases the weight of water and the diameter of the earth. It appears therefore almost superfluous to furnish the Association with the details of this system; but I have no doubt, that, if application were made through an agent of the Association at Turin, H. M. Government would be quite disposed to procure all the desired information; and I cannot avoid expressing the hope, that this country may attach itself completely to a system, which produces such happy results in France, Sardinia, and other parts of Italy.

In expressing to you all the pleasure which I feel in the discharge of this commission, I beg you, Sir, to receive the assurance of my very distinguished consideration.

(Signed) V. E. D'AZEGLIO.

END OF
TITLE